

Draft Individual Section 4(f) Final Evaluation

Pipestone Pass Erosion Repair
STPP 29-3(13)75
Control Number: 10092000
Silver Bow County

This document contains the information required for a *Section 4(f)* Evaluation as required by Section 4(f) of the U.S. Department of Transportation Act under 23 CFR 771.135.

Submitted pursuant to

46 U.S.C.303

By the
US Department of Transportation
Federal Highway Administration
and the
Montana Department of Transportation

Submitted By:



APPROVED

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Federal Highway Administration

DRAFT SECTION 4(f) EVALUATION

Pipestone Pass Erosion Repair STPP 29-3(13)75 UPN 10092000

Prepared For:



Prepared by:



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DOWL Project Number: 2664.12612.01

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- Appendix C. Executed Memorandum of Agreement
- Appendix D. Geotechnical Engineering Memo

LIST OF ACRONYMS

CFR.....	Code of Federal Regulations
DOT.....	Department of Transportation
FHWA.....	Federal Highway Administration
HAER.....	Historic American Engineering Record
MDT.....	Montana Department of Transportation
MOA.....	Memorandum of Agreement
MT-2.....	Montana Highway 2
NHPA.....	National Historic Preservation Act
NPS.....	National Park Service
NRHP.....	National Register of Historic Places
OWJ.....	Official(s) with Jurisdiction
RP.....	Reference Post
RSS.....	Reinforced Soil Slope
SHPO.....	State Historic Preservation Office
SNW.....	Soil Nail Wall
USC.....	United States Code
yd ³	cubic yard

1.0 INTRODUCTION

The Montana Department of Transportation (MDT) is proposing roadway improvements to Montana Highway 2 (MT-2 or Pipestone Pass/Harding Way) from Reference Post (RP) 75.1 to RP 75.5 to address substantial drainage and erosion issues in the area and to provide a safe and reliable roadway (proposed project). The proposed project is located within the boundaries of lands currently owned and managed by the Beaverhead-Deerlodge National Forest and within existing MDT right-of-way along MT-2, just south of Butte, Silver Bow County, Montana (Figures 1 and 2).

Publicly owned wildlife refuges, parks and recreation areas, and historic sites listed on, or eligible to be listed on, the National Register of Historic Places (NRHP) are protected from transportation impacts under Section 4(f) of the Department of Transportation (DOT) Act of 1966 (as amended), 49 United States Code (U.S.C) § 303. There are no wildlife refuges, parks, or recreation areas located within or directly adjacent to the project area. Three historic resources, however, are located along MT-2 and are within the project area.

The historic resources include the Milwaukee Road Pipestone Pass Tunnel Number 11 (24SB1162), the Harding Way Historic District (24SB1100), and the Harding Way Retaining Wall (24SB1163). The Harding Way Historic District was listed on the NRHP on April 8, 2024 (NR# SG100010219). The Milwaukee Road Pipestone Tunnel Number 11 is eligible for listing on the NRHP, and the Harding Way Retaining Wall is a contributing feature of the Harding Way Historic District; therefore, all three resources are protected under the provisions of Section 4(f).

1.1 Section 4(f) Guidelines

The Section 4(f) regulation requires that the proposed transportation use of any land from a publicly owned wildlife refuge, park or recreation area, or a historic site of national, state, or local significance (as determined by the Federal, State, or local officials with jurisdiction [OWJ] over the park, area, refuge, or site) be avoided, if avoidance is feasible and prudent, before any U.S. DOT funding or approvals can be granted. Per Section 4(f), the Secretary of Transportation may, however, approve a transportation program or project requiring the use of a Section 4(f) resource only if both the following conditions apply:

1. There is no prudent and feasible alternative to using that land; and
2. The program or project includes all possible planning to minimize harm to the Section 4(f) resource resulting from the use.

This Section 4(f) Evaluation memorializes analysis conducted to determine if there are prudent or feasible avoidance alternatives to using the Section 4(f) protected property(s) in accordance with the Federal Highway Administration (FHWA) regulations (23 Code of Federal Regulations [CFR] 774). Section 5 of this document details the analysis conducted to determine if any feasible or prudent avoidance alternatives exist. Sections 6 and 7 outline the alternatives that use a Section 4(f) resource(s) to determine least overall harm and provide a full evaluation of measures to minimize harm to that property.

Figure 1: Project Location

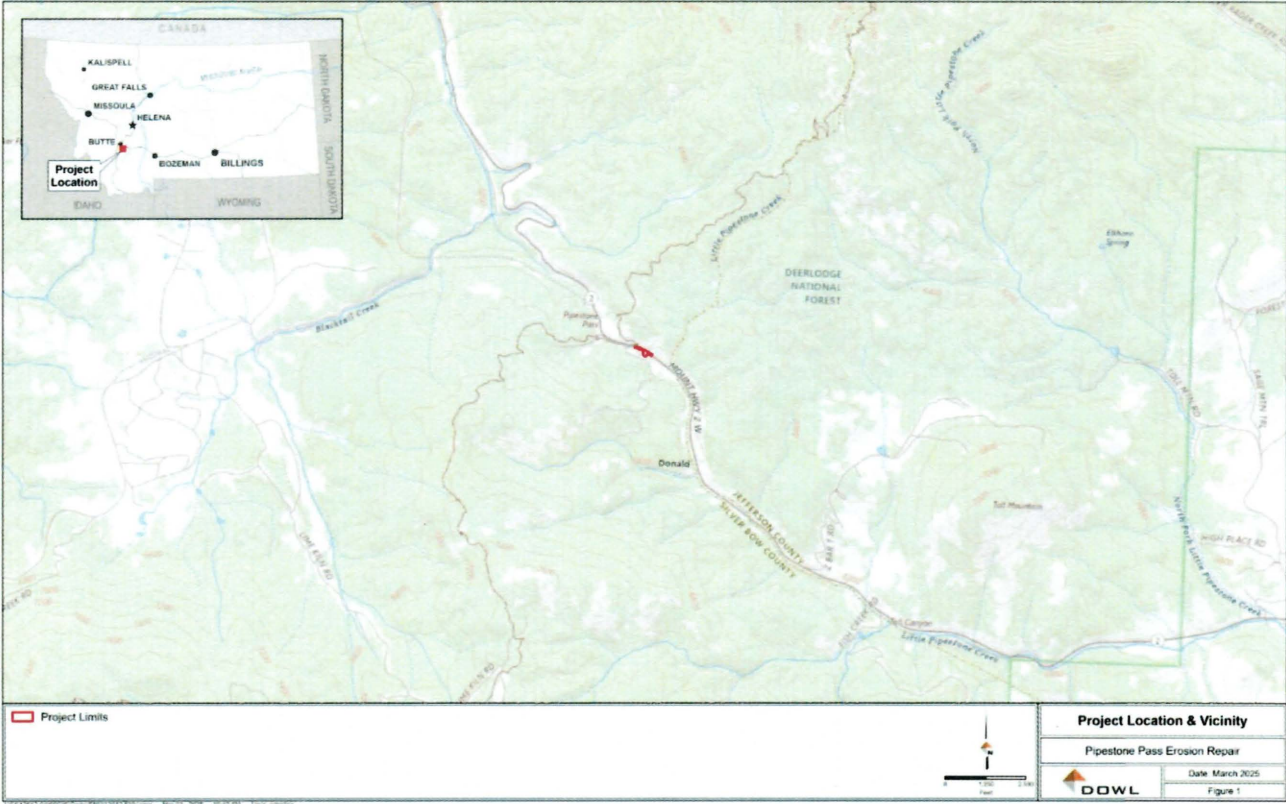
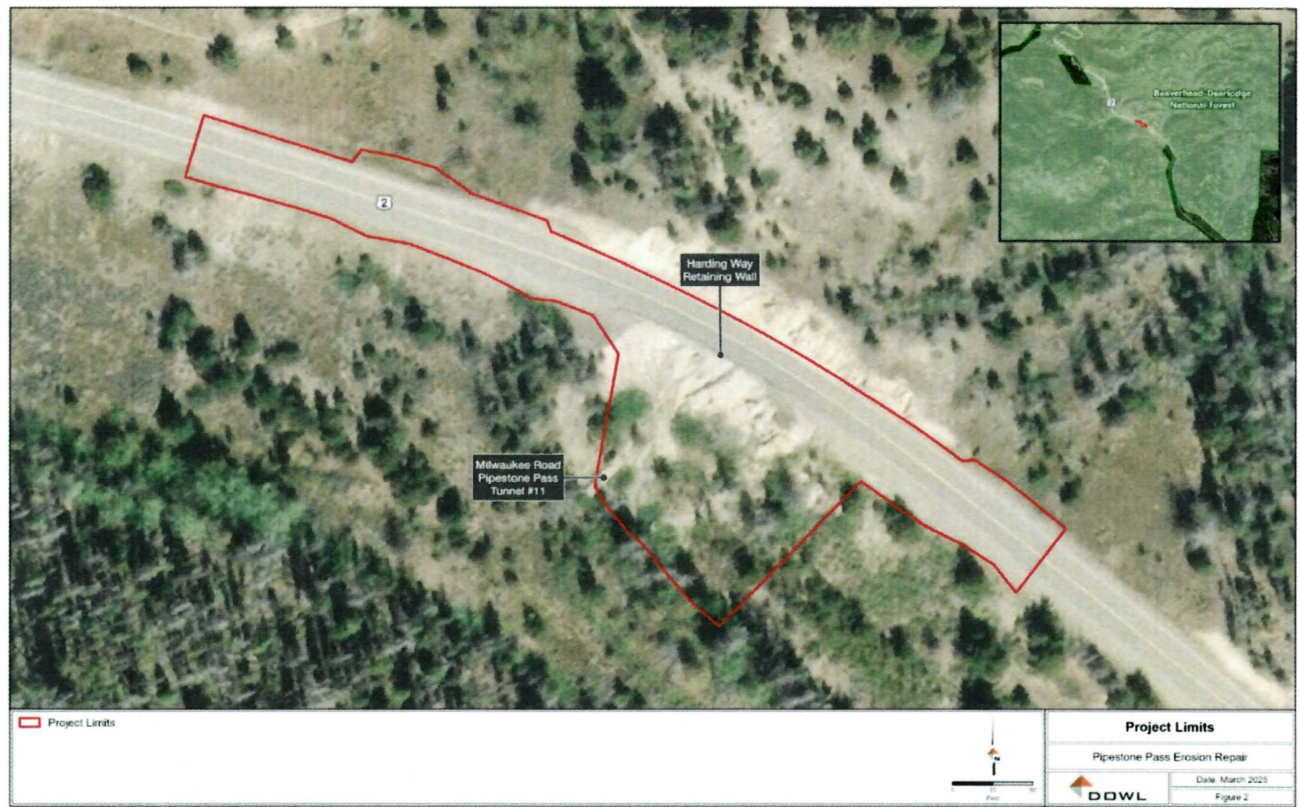


Figure 2: Project Limits



2.0 PROPOSED ACTION & PURPOSE AND NEED

2.1 Purpose and Need

The purpose of the Pipestone Pass project is to provide a safe and reliable roadway along MT-2 and to address substantial drainage and erosion issues through permanent prevention measures. The current MT-2 roadway through Pipestone Pass is supported by a heavily eroded southern slope and a structurally deficient and failing stone masonry retaining wall. The existing roadway does not include adequate drainage for water draining off the northern slope of Pipestone Pass onto MT-2, which has led to consistent erosion of the roadway fill slopes and deterioration of the existing retaining wall. Refer to Appendix A for a photo log of existing conditions.

2.2 Proposed Project Alternative(s)

For the purpose of this Section 4(f) evaluation, MDT reviewed and analyzed eight potential alternatives for construction of the project. Three avoidance alternatives and five non-avoidance alternatives (alternatives that would result in effects to Section 4(f) properties) were developed and are briefly discussed below.

Avoidance Alternatives

- **No Build** – MDT would not take any action, the existing roadway would remain open, and erosion would continue.
- **Road Closure** – The portion of MT-2 along Pipestone Pass would be permanently closed to all users. The traveling public would need to seek alternative routes.
- **New Northern Alignment** – The existing MT-2 roadway would be left in place and a new roadway alignment would be constructed over 300 feet to the north to completely bypass the existing roadway.

Refer to Section 5.1 for a detailed description of avoidance alternatives and figure (Figure 3) showing alternative locations.

Non-Avoidance (Least Overall Harm) Alternatives

- **Shift Road Alignment to the North (Option 1)** – Approximately 2,200 feet of the MT-2 roadway would be reconstructed approximately 45 feet north of the existing highway alignment.
- **Repair and Extend the Existing Retaining Wall (Option 2)** – The existing Harding Way retaining wall would be repaired and extended using a built-out soil nail wall (SNW).
- **Construct Reinforced Soil Slope (Option 3)** – A new, 1.5:1 reinforced soil slope (RSS) embankment would be constructed to the south of the existing MT-2 roadway alignment.
- **Construct New Slope Embankment along South Slope (Option 4)** – Fill material would bury the failing retaining wall south of MT-2 to create a new, conventional, roadway embankment at a 3:1 slope. The MT-2 alignment would shift 5.5 feet to the south.
- **Construct a New Retaining Wall and Cover Existing Wall (Option 5)** – A new retaining wall would be built downhill of the existing wall and additional fill material would be placed on the south slope, which would cover the existing wall.

Refer to Section 6.1 for a detailed description of non-avoidance (least overall harm) alternatives and figure (Figure 4) showing alternative locations.

3.0 SECTION 4(F) PROPERTIES

A Class III Cultural Resources survey and report were completed for the project in 2022. The report identified three historic properties within the project area, the Milwaukee Road Pipestone Pass Tunnel Number 11 (24SB1162), the Harding Way Historic District (24SB1100), and the Harding Way Retaining Wall (24SB1163). Following completion of the report, the State Historic Preservation Office (SHPO) concurred with MDT's determination that the Milwaukee Road Railroad Tunnel Number 11 and the Harding Way Historic District are eligible for the NRHP, with the Harding Way Retaining Wall noted as a contributing component of the Harding Way Historic District. The following sections describe the three resources that could be impacted by the project. Refer to Figure 2 for historic property locations.

3.1 Harding Way Historic District (24SB1100)

The Harding Way Historic District consists of a 5.1-mile linear segment of paved highway, and its associated features, that was built over Pipestone Pass between 1918 and 1922. The Silver Bow County commissioners and Butte civic leaders christened the highway Harding Way in 2021 in honor of the 29th president of the United States, Warren G. Harding. The roadway was subsequently rebuilt under the name(s) Nine Mile Road and Montana Highway 10 in the 1930s. MDT re-designated the route MT- 2 in 1971 after the completion of Interstate 90. The roadway was a critical component of Montana's primary east-west travel corridor contributing to state and local history. While the route was bypassed by Interstate 90 in 1965, the route still functions in its historic capacity and has been categorized as a historic district.

The Harding Way Historic District is recommended eligible for the NRHP under Criterion A of Title 36 CFR § 60.4: *Resources that are associated with events that have made a significant contribution to the broad patterns of our history.* SHPO concurred with this recommendation in December 2022.

3.2 Milwaukee Road Pipestone Pass Tunnel Number 11 (24SB1162)

The Milwaukee Road Pipestone Pass Tunnel Number 11 is part of the Chicago, Milwaukee, St. Paul & Pacific Railway (Milwaukee Road), which was completed in 1909, with the Pipestone Pass spur completed in 1912 to connect with the copper mining center of Butte. At the time, Butte was Montana's largest city and a seat of major political and economic power. The Milwaukee Road was the last of four major rail lines to serve the Butte area. The Milwaukee Road was electrified from Harlowton, Montana to Avery, Idaho by 1917. The railroad was abandoned in 1974, and tracks were subsequently removed in 1980.

The Milwaukee Road Pipestone Pass Tunnel Number 11 is approximately 3,340 feet long and traverses underneath Pipestone Pass and MT-2 at an angle to the roadway alignment. At the time the Class III Cultural Resources Report was completed for the project in 2022, the tunnel showed evidence of internal collapse at the southeast end. Pedestrian access is blocked by gates for safety reasons (GCM Services, Inc, 2022).

The Milwaukee Road Pipestone Pass Tunnel Number 11 is recommended eligible for listing on the NRHP. The resource is considered significant to both local and state history for its association with railroad development, including the use of electrification along this portion of the route. The electrification of the railroad was considered a pioneering step in railroad development due to the rugged and difficult terrain. Agricultural development in the area between 1930 and 1990 is at least partially linked to the railroad. The railbed (and tunnel) retain their historical location, setting, and design and are therefore eligible for NRHP listing under

Criterion A of Title 36 CFR § 60.4: *Resources that are associated with events that have made a significant contribution to the broad patterns of our history* (MDT, 2022a). SHPO concurred with this recommendation in December 2022.

3.3 Harding Way Retaining Wall (24SB1163)

The Harding Way Retaining Wall, also referred to as Nine Mile Road Retaining Wall, is located within the NRHP listed Harding Way Historic District, which extends along MT-2 (Harding Way) from the Silver Bow – Jefferson County line to the Junction of MT-2 and Continental Drive (RP 80.1). This NRHP listed historic district was constructed in 1934 and is composed of design elements and features consistent with MDT roads constructed during that period. The Harding Way Retaining Wall is a stone masonry retaining wall located at RP 75.35 on the south side of MT-2, which was constructed in 1928 by contractors Sutherland and Burns of Kalispell. The wall is a contributing feature of the historic district. The structure is approximately 24 feet long, four feet wide, 20 feet deep, and comprised of unfinished granite blocks and cobblestones. The structure is heavily deteriorated and located within a highly eroded gully on the south side of MT-2. The structure is no longer functional due to the heavy erosion, soil behind the embankment has eroded away, and stones along the bottom of the retaining wall have been washed down the gully. The Harding Way Retaining Wall is close to complete failure (MDT, 2022b).

The Harding Way Retaining Wall is recommended eligible for the NRHP under Criterion A of Title 36 CFR § 60.4 as a contributing feature of the Harding Way Historic District (24SB1120): *Resources that are associated with events that have made a significant contribution to the broad patterns of our history*. SHPO concurred with this recommendation in December 2022.

4.0 FEASIBLE AND PRUDENT AVOIDANCE ALTERNATIVES

A feasible and prudent avoidance alternative avoids using the Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) property. In assessing the importance of protecting the Section 4(f) property, it is appropriate to consider the relative value of the resource to the preservation purpose of the statute. Feasible and prudent alternatives to avoid Section 4(f) properties must meet the proposed project's purpose and need.

Criteria and questions used to evaluate whether an alternative is considered prudent and feasible are listed below, as defined in 23 CFR 774.17.

1. An alternative is **not feasible** if it cannot be built as a matter of sound engineering judgement.
2. An alternative is **not prudent** if the response to any of the following questions is yes:
 - A. Does the alternative compromise the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need?
 - B. Does the alternative cause unacceptable safety or operational problems?
 - C. Does the alternative cause severe social, economic, or environmental impacts after reasonable mitigation?
 - D. Does the alternative cause severe disruption to established communities after reasonable mitigation?

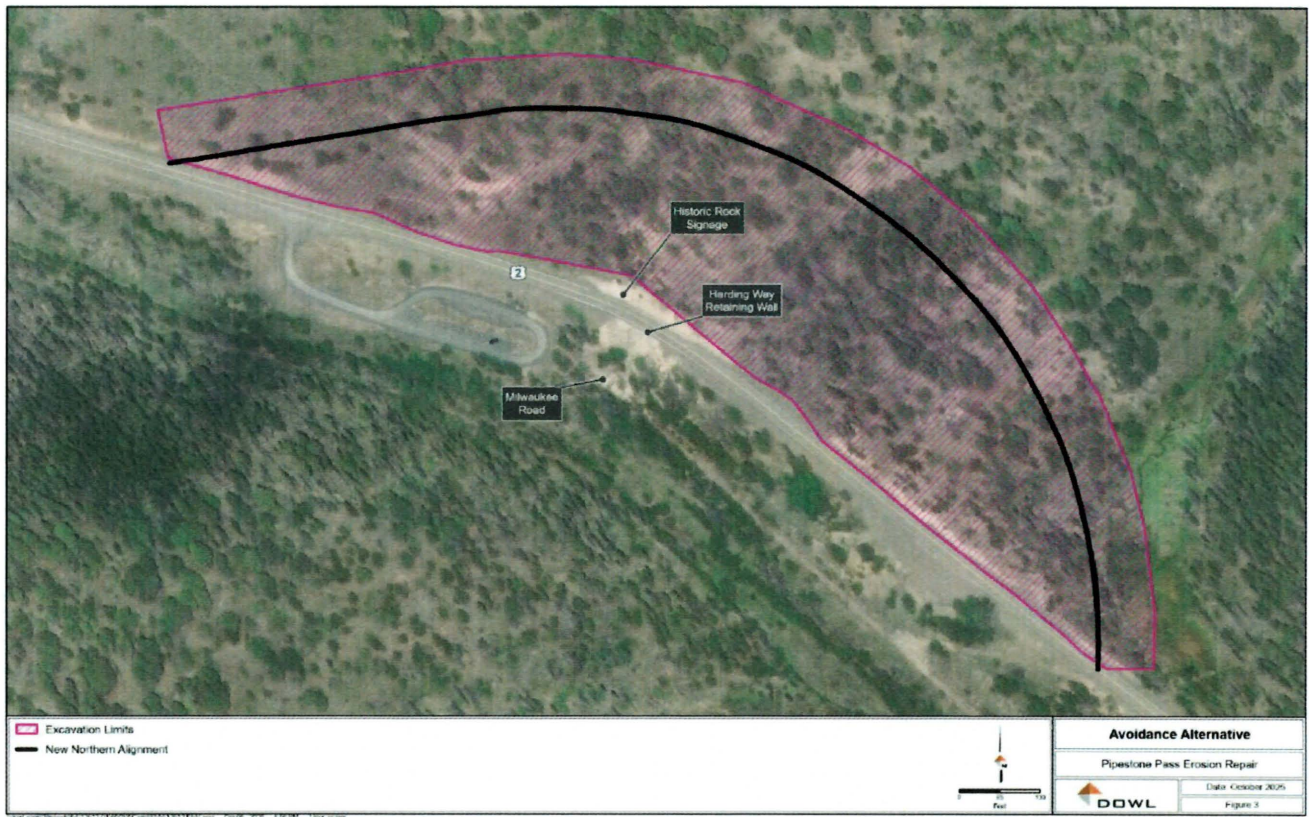
- E. Does the alternative cause severe disproportionate impacts to minority or low-income populations after reasonable mitigation?
- F. Does the alternative cause severe impacts to environmental resources protected under other federal statutes after reasonable mitigation?
- G. Does the alternative result in additional construction, maintenance, or operational costs of an extraordinary magnitude?
- H. Does the alternative cause other unique problems or unusual factors?
- I. Does the alternative involve multiple factors listed above, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude?

4.1 Avoidance Alternatives Considered

The following avoidance alternatives were evaluated for this Section 4(f) analysis. Refer to Figure 3 for alternative locations.

- **No Build** – Under this alternative conditions along MT-2 would remain the same and continue to deteriorate. The existing retaining wall would be at an increased risk of failure with the passage of time resulting in loss of historical integrity (MDT, 2025b; MDT, 2025a). This wall supports the roadway, and its inevitable decay would result in failure encroaching into the pavement and eventual loss of the highway (MDT, 2025b; MDT, 2025a).
 - **Construction Cost:** Unknown – costs associated with the No Build Alternative would vary based on the severity of deterioration, emergency status, and frequency of maintenance needs. Maintenance and repair costs would continue until the retaining wall eventually fails.
- **Road Closure** – Under this alternative, the portion of MT-2 along Pipestone Pass would be permanently closed to the traveling public. Vehicular traffic would be rerouted on to alternate routes, which may lead to increased congestion on local roadways, added delays for users, and loss of access to areas within the Beaverhead-Deerlodge National Forest. The existing conditions of the retaining wall and railroad tunnel would remain the same, with the inevitable decay of the retaining wall due to continued erosion. No work would be completed along the segment of MT-2.
 - **Construction Cost:** None – this alternative would not result in any direct costs beyond the cost of road closure signs, which MDT already owns, and potential monitoring by MDT staff. No roadway maintenance or construction would occur.
- **New Northern Alignment** – Under this alternative, MT-2 would be reconstructed on a new alignment located over 300 feet north of existing MT-2 (Figure 3). The new alignment would deviate from the existing roadway approximately 1,000 feet west of the retaining wall, traverse north of existing MT-2 for 0.5 mile, and tie back in with MT-2 approximately 2,500 feet east of the retaining wall. Substantial excavation and blasting of the northern slope of Pipestone Pass, totaling approximately 1,047,429 cubic yards of removal, would be required. All three historic resources, as well as historic markers located north of existing MT-2 would be avoided by construction of this alternative.
 - **Construction Cost:** Approximately 13,913,822 dollars (Ahlich, 2025).

Figure 3: Avoidance Alternative



4.1.1 Evaluation of Avoidance Alternatives

Table 1 lists the three avoidance alternatives that were considered and evaluated by MDT, the advantages of each alternative, the rationale for potentially dismissing the alternative, and an evaluation of each alternative in terms of the Section 4(f) feasible and prudent criteria.

Table 1: Avoidance Alternatives Evaluated

Alternative	Advantages of Alternative	Rationale for Potentially Dismissing Alternative*	Section 4(f) Factors for Potentially Dismissing Alternative
No Build	<ul style="list-style-type: none"> All NRHP-eligible cultural/historic resources would be fully avoided and left in their current state. 	<ul style="list-style-type: none"> Existing conditions would continue to deteriorate. Increased risk of retaining wall failure, which would include the loss of historic integrity of the Harding Way Retaining Wall. Slope failure may affect the Milwaukee Road Pipestone Pass Tunnel Number 11. Wall failure would inevitably cause MT-2 at Pipestone Pass to fail, which would close the roadway to thru traffic. This alternative does not meet the purpose and need of the project. 	<p>A – Safety concerns, lack of erosion control facilities, and potential for structural failure compromise the project’s ability to meet purpose and need.</p> <p>B – Unacceptable safety concerns related to the potential retaining wall failure, lack of erosion control, and continued deterioration of existing conditions.</p> <p>G – Constant construction, maintenance, and operational costs due to continued deterioration of the roadway and retaining wall. Should emergency repairs be needed, high costs would be associated with such repairs, as it would likely be severe and require complete reconstruction of the roadway and slopes.</p>
Close Road	<ul style="list-style-type: none"> All NRHP-eligible cultural/historic resources would be fully avoided and left in their current state. Little cost to implement. 	<ul style="list-style-type: none"> Existing conditions would continue to deteriorate. Vehicular users would need to seek alternate routes, potentially adding substantial travel time. Potential loss of access to sites within the national forest. Traffic congestion and wear and tear on alternate routes. This alternative does not meet the purpose and need of the project. 	<p>A – Lack of suitable connection along MT-2 and substantial travel time delays comprise the project’s ability to meet the purpose and need.</p> <p>B – This segment of MT-2 would be rendered unusable, creating operational deficiencies to the local roadway network.</p> <p>C – Loss of access to sites within the national forest may result in severe social impacts and potential economic effects.</p>

Alternative	Advantages of Alternative	Rationale for Potentially Dismissing Alternative*	Section 4(f) Factors for Potentially Dismissing Alternative
New North Alignment	<ul style="list-style-type: none"> All NRHP-eligible cultural/historic resources would be fully avoided and left in their current state. Would address roadway erosion and safety concerns by bypassing the affected segment. 	<ul style="list-style-type: none"> Most expensive alternative evaluated at a cost of \$13,913,822. Approximately 1,047,429 cubic yards of waste material would result from blasting and excavation. Waste material would be primarily rock, which could not be reused elsewhere in the project area. Known and unknown environmental concerns/impacts associated with construction of a new alignment in undisturbed areas, including impacts to wetlands and Little Pipestone Creek at eastern end of project. Length of time to construct, requiring users to continue using the existing, deteriorating highway. 	<p>B – Unacceptable safety concerns related to the potential failure of existing MT-2 during construction.</p> <p>F – Unknown amount of environmental impacts due to construction on undisturbed ground. These environmental impacts would likely not be considered severe after mitigation efforts.</p> <p>G – The construction costs, including blasting and removal of water material, would substantially surpass MDT’s budget constraints for a project of this size.</p>
<p>*All specific design specifications or pricing estimates included in this section were pulled from MDT communications (Ahlrich, 2025).</p>			

4.1.2 Avoidance Alternatives Dismissed

Three avoidance alternatives were considered for the proposed project. As detailed in Table 1, none of the alternatives met the Section 4(f) feasible and prudent standard. Additionally, the No Build and Road Closure alternatives failed to meet the purpose and need of the project. Therefore, all three alternatives were dismissed.

5.0 USE OF SECTION 4(F) PROPERTIES

The three avoidance alternatives evaluated (the No-Build, Road Closure, and New Northern Alignment alternatives) are not anticipated to result in any Section 4(f) use. Therefore, the avoidance alternatives are not discussed in this section.

All five non-avoidance alternatives would require construction within the Harding Way Historic District, which would result in a **No Adverse Effect** determination and a Section 4(f) *De Minimis* impact. SHPO concurred with MDT’s No Adverse Effect determination and the Section 4(f) *De Minimis* use to Harding Way Historic District on December 9, 2024.

Impacts to the Milwaukee Road Pipestone Pass Tunnel Number 11 and Harding Way Retaining Wall vary between the non-avoidance alternatives, as described below.

- **Shift Road Alignment to the North (Option 1)**
 - Milwaukee Road Pipestone Pass Tunnel Number 11 – Option 1 may result in portions of the Milwaukee Road Pipestone Pass Tunnel Number 11 to be partially buried at the base of the southern slope due to continued erosion.
 - Option 1 would likely result in a No Adverse Effect determination to the Milwaukee Road Pipestone Pass Tunnel Number 11 under Section 106.
 - Option 1 would likely result in a De Minimis determination to the Milwaukee Road Pipestone Pass Tunnel Number 11 under Section 4(f) as defined in 23 CFR 774.17.
 - Harding Way Retaining Wall – Option 1 would retain the contributing features of the Harding Way Retaining Wall in its current condition; however, the wall would continue to deteriorate due to continued erosion.
 - Option 1 would likely result in a No Adverse Effect determination to the Harding Way Retaining Wall under Section 106.
 - Option 1 would likely result in a De Minimis determination to the Harding Way Retaining Wall under Section 4(f) as defined in 23 CFR 774.17.
- **Repair and Extend the Existing Retaining Wall (Option 2)**
 - Milwaukee Road Pipestone Pass Tunnel Number 11 – Option 2 would retain the Milwaukee Road Pipestone Pass Tunnel Number 11 in its current condition and would not impact this resource.
 - Option 2 would likely result in a No Effect determination to the Milwaukee Road Pipestone Pass Tunnel Number 11 under Section 106.
 - Option 2 would likely result in a No Use determination to the Milwaukee Road Pipestone Pass Tunnel Number 11 under Section 4(f) as defined in 23 CFR 774.17.
 - Harding Way Retaining Wall – Option 2 would repair and extend the Harding Way Retaining Wall, which would impact the contributing features of the resource by encapsulating the historic wall within a soil nail wall.
 - Option 2 would likely result in an Adverse Effect determination to the Harding Way Retaining Wall under Section 106.
 - Option 2 would likely result in a Use determination to the Harding Way Retaining Wall under Section 4(f) as defined in 23 CFR 774.17.
- **Construct Reinforced Soil Slope (Option 3)**
 - Milwaukee Road Pipestone Pass Tunnel Number 11 – Option 3 would retain the Milwaukee Road Pipestone Pass Tunnel Number 11 in its current condition and would not impact this resource.
 - Option 3 would likely result in a No Effect determination to the Milwaukee Road Pipestone Pass Tunnel Number 11 under Section 106.
 - Option 3 would likely result in a No Use determination to the Milwaukee Road Pipestone Pass Tunnel Number 11 under Section 4(f) as defined in 23 CFR 774.17.

- Harding Way Retaining Wall – Option 3 would remove/bury and, therefore, destroy the Harding Way Retaining Wall.
 - Option 3 would likely result in an Adverse Effect determination to the Harding Way Retaining Wall under Section 106.
 - Option 3 would likely result in a Use determination to the Harding Way Retaining Wall under Section 4(f) as defined in 23 CFR 774.17.
- **Construct New Slope Embankment along South Slope (Option 4)**
 - Milwaukee Road Pipestone Pass Tunnel Number 11 – Option 4 would completely bury and close the Milwaukee Road Pipestone Pass Tunnel Number 11.
 - Option 4 would likely result in an Adverse Effect determination to the Milwaukee Road Pipestone Pass Tunnel Number 11 under Section 106.
 - Option 4 would likely result in a Use determination to the Milwaukee Road Pipestone Pass Tunnel Number 11 under Section 4(f) as defined in 23 CFR 774.17.
 - Harding Way Retaining Wall – Option 4 would completely bury the Harding Way Retaining Wall and no portion of the existing resource would be visible or preserved in its historic context.
 - Option 4 would likely result in an Adverse Effect determination to the Harding Way Retaining Wall under Section 106.
 - Option 4 would likely result in a Use determination to the Harding Way Retaining Wall under Section 4(f) as defined in 23 CFR 774.17.
- **Construct a New Retaining Wall and Cover Existing Wall (Option 5)**
 - Milwaukee Road Pipestone Pass Tunnel Number 11 – Option 5 would retain the Milwaukee Road Pipestone Pass Tunnel Number 11 in its current condition and would not impact this resource.
 - Option 5 would likely result in a No Effect determination to the Milwaukee Road Pipestone Pass Tunnel Number 11 under Section 106.
 - Option 5 would likely result in a No Use determination to the Milwaukee Road Pipestone Pass Tunnel Number 11 under Section 4(f) as defined in 23 CFR 774.17.
 - Harding Way Retaining Wall – Option 5 would bury the Harding Way Retaining Wall and no portion of the existing resource would be visible or preserved in its historic context.
 - Option 5 would likely result in an Adverse Effect determination to the Harding Way Retaining Wall under Section 106.
 - Option 5 would likely result in a Use determination to the Harding Way Retaining Wall under Section 4(f) as defined in 23 CFR 774.17.

Additional details regarding each of the alternative's impacts to Section 4(f) resources can be found in Section 6.1.1.

6.0 LEAST OVERALL HARM

Per 23 CFR 774.3, if there are no feasible and prudent alternatives that avoid the Section 4(f) property(s), then the Administration (FHWA) may approve, from among the remaining alternatives that use the Section 4(f) property(s), only the alternative that causes the least overall harm to the Section 4(f) property(s). This is done by balancing, or comparing, the alternatives under consideration in terms of the seven factors specified in 23 CFR 774.3(c).

6.1 Alternatives Considered

While a formal alternatives analysis report was not prepared for the proposed project, several non-avoidance alternatives were thoroughly considered and reviewed by MDT. The following non-avoidance alternatives were evaluated for the Section 4(f) analysis. Refer to Figure 4 for alternative locations.

- **Shift Road Alignment to the North (Option 1)** – Under this alternative, approximately 2,200 feet of the MT-2 roadway would be reconstructed approximately 45 feet north of the existing highway alignment. To implement the proposed roadway shift, the northern adjacent rock slope of Pipestone Pass would need to be cut into via blasting. This rock cut would extend approximately 50 feet into the slope to provide adequate room for both the new alignment of MT-2 and a ditch to the north of the roadway for drainage and rockfall catch. Roughly 41,000 cubic yards of soil and rock would need to be removed and wasted (MDT, 2025c). No updates, such as erosion control, would be made to the south slope of Pipestone Pass, apart from installation of guardrails (MDT, 2025b).
 - **Construction Cost:** Approximately 2,300,000 dollars (MDT, 2025b)
- **Repair and Extend the Existing Retaining Wall (Option 2)** – Under this alternative, the existing Harding Way Retaining Wall would be repaired and extended using a built-out soil nail wall (SNW). The SNW would consist of corrosion proof nails and steel bars, known as tendons, as well as welded wire mesh to be placed along the entirety of the existing southern roadway slope of Pipestone Pass within the project limits. Installation of a SNW would be labor and material intensive and would likely result in the encasing/destruction of the existing retaining wall (MDT, 2025b). This option does not address the drainage issues north of the roadway.
 - **Construction Cost:** Approximately 440,000 dollars (MDT, 2025b)
- **Construct Reinforced Soil Slope (Option 3)** – Under this alternative, a new, stable slope embankment would be constructed to the south of the existing MT-2 roadway alignment. The new embankment would be an RSS, which is compacted and reinforced soil to allow for greater stability. The RSS embankment would require a relatively large amount of specialized soils (approximately 1,500 cubic yards) to construct the steep 1.5:1 slope. This option would also require the upper slope break to start 10 feet outside of the existing guardrail. This would increase slope width to the south of the roadway (MDT, 2025c). The alignment of MT-2 would remain in the existing location following construction. A 1:1 slope was considered to decrease overall footprint; however, there would be greater restrictions on fill material and a welded wire face would be required resulting in greater design and construction complexity (MDT, 2025b). This option does not address the drainage issues north of the roadway.
 - **Construction Cost:** Approximately 700,000 dollars (MDT, 2025b)

- **Construct New Slope Embankment along South Slope (Option 4)** – Under this alternative, fill material would be placed along the southern slope of the MT-2 roadway, burying the failing retaining wall, to create a new, conventional, roadway embankment. New embankment fill is estimated at 36,000 cubic yards (MDT, 2025c). The alignment of MT-2 would be shifted approximately 5.5 feet south onto the new embankment to allow for ditch improvements north of the roadway to capture runoff from the northern slope and limit future erosion. The alternative includes a 3:1 slope on the south side of MT-2 to support the shifted roadway alignment, and it also removes the need for a new retaining wall. The new embankment slope, however, would result in the placement of fill over the Milwaukee Road Pipestone Pass Tunnel 11 entrance and tunnel headwall, which traverses underneath Pipestone Pass and MT-2 at an angle to the roadway alignment. Guardrail would be placed and extended on the south shoulder of the new alignment consistent with MDT design standards (MDT, 2024).
 - **Construction Cost:** Approximately 1,620,000 dollars (MDT, 2025d)

- **Construct a New Retaining Wall and Cover Existing Wall (Option 5)** – Under this alternative, a new retaining wall would be built downhill of the existing wall and additional fill material would be placed on the south slope, which would cover the existing wall. The only feasible location to excavate for a good foundation and to allow for proper slopes would be 50 feet out from edge of roadway, requiring a 40-foot vertical wall. This option does not address the drainage issues north of the roadway.
 - **Construction Cost:** Not Determined – alternative would result in a very large retaining wall with a large drop. Due to the new safety hazard this alternative would present, it was eliminated early in the review and not carried forward for cost estimating.

Figure 4: Least Overall Harm Non-Avoidance Alternatives



6.1.1 *Evaluation of Alternatives (Least Overall Harm)*

Table 2 lists the five non-avoidance alternatives that were considered and evaluated by MDT, the advantages of each alternative, the rationale for potentially dismissing the alternative, and an evaluation of each alternative in terms of the Section 4(f) least overall harm factors found in 23 CFR 774.3(c). It is important to note that all five alternatives would impact the Harding Way Retaining Wall to some degree. In addition, all alternatives would require construction within the Harding Way Historic District, which would result in a **No Adverse Effect** determination and a Section 4(f) *De Minimis* use.

Factors used to evaluate whether an alternative is considered to have the least overall harm are listed below, as defined in 23 CFR 774.3(c)(1).

- i. The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property)
- ii. The relative severity of the remaining harm, after mitigation, to protected activities, attributes, or features that qualify each Section 4(f) property for protection
- iii. The relative significance of each Section 4(f) property
- iv. The views of the official(s) with jurisdiction over each Section 4(f) property
- v. The degree to which each alternative meets the purpose and need of the project
- vi. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f)
- vii. Substantial differences in costs among the alternatives.

Based on review of the above factors, it was determined that least overall harm factor (iii), which is detailed below, would have equal weight for all alternatives. Therefore, this factor was not used to evaluate and compare alternatives to determine least overall harm.

- **Factor (iii)** - Both the Harding Way Retaining Wall and Milwaukee Road Tunnel Number 11 are in relatively poor condition due to erosion and structural deterioration. Both the Harding Way Retaining Wall and Milwaukee Road Tunnel Number 11 were determined to be significant under Criterion A of Title 36 CFR § 60.4. Therefore, it was determined that both historic resources hold the same relative significance as Section 4(f) properties.

Table 2 below evaluates and compares each of the five alternatives for least overall harm based on the remaining six factors as referenced above.

Table 2: Least Overall Harm Alternatives Evaluated

Alternative	Advantages of Alternative	Evaluation of Least Overall Harm Criteria 23 CFR 774.3(c)(1)
<p>Shift Road Alignment to the North (Option 1)</p>	<ul style="list-style-type: none"> • Partial** preservation of Harding Way Retaining Wall and Milwaukee Road Tunnel Number 11. • Moves the roadway away from the eroding slope. • Potential to gain additional roadway width for widening in the future with an increased shift. 	<p>Factor (i) – It is likely that the Harding Way Retaining Wall and Milwaukee Road Tunnel Number 11 would only be partially** preserved. This would likely result in a No Adverse Effect determination under Section 106 and a De Minimis determination under section 4(f) as defined in 23 CFR 774.17. In addition, there would be a <i>De Minimis</i> use of the Harding Way Historic District. Mitigation would be consistent with information presented in Section 7.0.</p> <p>Factor (ii) – The contributing features of the Harding Way Retaining Wall and the Milwaukee Road Tunnel Number 11 would remain intact and would not be physically impacted by the alternative. However, by not addressing drainage and erosion, the wall will continue to deteriorate and the tunnel may become partially buried.</p> <p>Factor (iv) – Under Option 1, the Milwaukee Road Tunnel Number 11 would remain open. However, Beaverhead-Deerlodge National Forest, which is the OWJ for this resource, stated in October 22, 2024, coordination, that they would prefer the tunnel to be fully closed to address pedestrian safety. In addition, SHPO was also consulted as an OWJ for both resources and did not provide any objections to the potential adverse effects on either resource.</p> <p>Factor (v) – Option 1 only partially satisfies the project purpose and need by constructing a safe and reliable roadway along MT-2. However, the underlying causes of erosion would not be addressed. The retaining wall would be left as is and eroded materials would continue to slough off the south slope of Pipestone Pass, leading to further deterioration of the retaining wall. In addition, repair of the Harding Way Retaining Wall may ultimately still be required to address erosion control, and historical integrity may be lost during this effort.</p> <p>Factor (vi) – Option 1 would potentially impact wetlands and Little Pipestone Creek to the east of the project area and may impact additional historic features/sites (painted rock billboards) located on the northern slope of Pipestone Pass. The additional historic features were not evaluated in this report. This is because Option 1 is the only alternative that would potentially impact the features and this option was deemed not reasonable and prudent</p>

Alternative	Advantages of Alternative	Evaluation of Least Overall Harm Criteria 23 CFR 774.3(c)(1)
		<p>for reasons beyond the additional historic feature impacts, as described in this report.</p> <p>Factor (vii) – Option 1 is the most expensive non-avoidance alternative at approximately 2.3 million dollars. The cost is high due to the following factors:</p> <ul style="list-style-type: none"> • Extensive blasting of northern rock slopes would be required. • A large volume of waste material (approximately 41,000 cubic yards) would result from blasting. Waste material would be primarily rock, which could not be reused elsewhere in the project area. • Reconstruction would extend across an approximately 2,200-foot section of roadway to achieve the shift and maintain acceptable geometry consistent with MDT design standards.

Alternative	Advantages of Alternative	Evaluation of Least Overall Harm Criteria 23 CFR 774.3(c)(1)
Repair and Extend the Existing Retaining Wall (Option 2)	<ul style="list-style-type: none"> • Lowest Cost at approximately 440,000 dollars. • Least invasive solution, as roadway and slope reconstruction would be limited. • The quickest solution to address erosion and the deteriorating retaining wall. • Milwaukee Road Tunnel Number 11 would not be impacted by construction and would be left in its current condition. 	<ul style="list-style-type: none"> • Factor (i) – The Harding Way Retaining Wall would be adversely affected. The Milwaukee Road Tunnel Number 11 would not be impacted. In addition, there would be a <i>De Minimis</i> use of the Harding Way Historic District. Mitigation for the retaining wall would be consistent with information presented in Section 7.0. • Factor (ii) – It is likely that the existing retaining wall would not have the strength to withstand extensive reconstruction and would be destroyed by the repairs. If the repairs did not destroy the wall, much of the wall would be encased, and its historic integrity lost. Option 2 would still result in an Adverse Effect and Section 4(f) use of the Harding Way Retaining Wall. Construction would not result in impacts to the Milwaukee Road Tunnel Number 11. • Factor (iv) – Same Response as Option 1. • Factor (v) – Option 2 does not satisfy the purpose and need of the project due to the following factors: <ul style="list-style-type: none"> ○ Limited ability to improve width of slope to address erosion and safety concerns. ○ Underlying causes of erosion would not be addressed. • Factor (vi) – Option 2 is not anticipated to impact other environmental resources in the project area. • Factor (vii) – Option 2 would cost approximately 440,000 dollars. Option 2 is the least invasive and most time efficient alternative, which results in the low cost of the alternative. However, this option would require continued maintenance and inspection costs following construction due to design life restrictions and increased consequences of failure.

Alternative	Advantages of Alternative	Evaluation of Least Overall Harm Criteria 23 CFR 774.3(c)(1)
Construct a Reinforced Soil Slope (Option 3)	<ul style="list-style-type: none"> • Small project footprint compared to other options. • Would retain the tunnel opening for Milwaukee Road Tunnel Number 11. • Traffic control during construction would be relatively minor. 	<ul style="list-style-type: none"> • Factor (i) – Same response as Option 2. • Factor (ii) – Under Option 3, the Harding Way Retaining Wall would be adversely affected, as it would either be removed or buried to install the RSS. • Factor (iv) – Same response as Option 1. • Factor (v) – Option 3 does not satisfy the purpose and need of the project due to the following factors: <ul style="list-style-type: none"> ○ Difficult to prevent erosion and establish vegetation on a steep south-facing slope. ○ Drainage issues and the underlying causes of erosion would not be addressed. • Factor (vi) – Option 3 is not anticipated to impact other environmental resources in the project area. • Factor (vii) – Option 3 would cost approximately 700,000 dollars to construct and would require continued maintenance and inspection costs following construction due to the steep slope and chance of continued erosion.
Construct New Slope Embankment along South Slope (Option 4)	<ul style="list-style-type: none"> • Common construction techniques would be used during construction, which would simplify design and contracting processes. • New embankment would provide a stable slope and less potential for erosion. • Vegetation establishment would be achievable. • Increased roadway width to the south of the existing MT-2 alignment, with minimal extra effort. • Allows for a ditch to be placed north of the roadway to address drainage issues. • Most sustainable/greatest design life, with minimal need for maintenance. 	<ul style="list-style-type: none"> • Factor (i) – Option 4 would have an adverse effect on both historic resources within the project area. In addition, there would be a <i>De Minimis</i> use of the Harding Way Historic District. Mitigation would be consistent with information presented in Section 7.0. • Factor (ii) – Option 4 would have an adverse effect to both historic resources, which would be entirely buried during construction. • Factor (iv) – Option 4 would fulfill Beaverhead-Deerlodge National Forest's desire to close the Milwaukee Road Tunnel Number 11 due to safety concerns. In addition, the SHPO was also consulted as an OWJ for both resources and did not provide any objections to the adverse effect on either resource. • Factor (v) – Option 4 fully satisfies the purpose and need of the project. • Factor (vi) – Option 4 is not anticipated to impact other environmental resources in the project area. • Factor (vii) – Option 4 would cost approximately 1,620,000 dollars to construct; however, this option would be the most cost effective in that it would not require substantial continued maintenance costs as compared to Options 2 and 3.

Alternative	Advantages of Alternative	Evaluation of Least Overall Harm Criteria 23 CFR 774.3(c)(1)
Construct a New Retaining Wall and Cover Existing Retaining Wall (Option 5)	<ul style="list-style-type: none"> • Milwaukee Road Tunnel Number 11 would not be impacted by construction and would remain as is. 	<ul style="list-style-type: none"> • Factor (i) – Same Response as Option 2. • Factor (ii) – Option 5 would still result in an Adverse Effect and Section 4(f) use of the Harding Way Retaining Wall. Construction would not result in impacts to the Milwaukee Road Tunnel Number 11. • Factor (iv) – Same Response as Option 1. • Factor (v) - Option 5 does not satisfy the purpose and need of the project due to the following factors: <ul style="list-style-type: none"> ○ New retaining wall would not address safety, as a new hazard would be created through the large drop off following construction of the new retaining wall. • Factor (vi) – The new retaining wall would be exceedingly tall, about 40 feet high, which could result in visual impacts within the project area. • Factor (vii) – Cost is unknown. Due to the creation of a new safety hazard, Option 5 was removed from evaluation prior to the cost analysis.
<p><i>*All specific design specifications, amounts, or pricing estimates included in this section were pulled from MDT's Geotechnical Engineering Alignment Report (Activity 464) (MDT, 2025b).</i></p>		
<p><i>**Partial, as the existing historic wall will continue to collapse and eroding slope material would be deposited at the base of the slope, potentially burying some portion of the tunnel entrance (MDT, 2025b).</i></p>		

6.1.2 Non-Avoidance Alternatives Dismissed

Five non-avoidance alternatives were considered for the proposed project. As detailed in Table 2, Option 1, Option 2, Option 3, and Option 5 would avoid impacting (to some degree) the Milwaukee Road Tunnel Number 11 (factors i and ii); however, these alternatives did not meet Beaverhead-Deerlodge National Forest's desire to close the Milwaukee Road Tunnel Number 11 due to safety concerns (Factor iv). These four alternatives also did not fully meet the purpose and need of the project (Factor v). Additionally, Option 1 was exceedingly expensive to construct compared to the other alternatives, and while Options 2 and 3 were the least expensive to construct, ongoing inspection and maintenance would likely make them more costly in the future (Factor vii). A cost for Option 5 was not determined given the new safety hazard a large retaining wall would create.

6.1.3 Selection of Preferred Alternative

The Preferred Alternative identified for this project is *Option 4 - Construct New Slope Embankment along South Slope*.

While this alternative would bury the Harding Way Retaining Wall and fill/seal the southeast entrance to the Milwaukee Road Pipestone Pass Tunnel Number 11, the Beaverhead-Deerlodge National Forest supports MDT's closing of the southeast end of the tunnel due to safety concerns (Factor iv). As noted in the 2022 Class III Cultural Resource Report and the November 2024 Preliminary Field Review Report, the existing tunnel shows evidence of internal collapse near the southeast entrance. The tunnel is currently not open for pedestrian access and is fenced off due to the declining integrity of the tunnel structure.

Option 4 is the only alternative that fully meets the purpose and need of the project by addressing the underlying drainage issues, slope erosion, and safety concerns along the highway (Factor v). This alternative would not only provide the required slope stability on the south side of the roadway but would also include construction of a drainage ditch to the north, which would address identified drainage issues and prevent future erosion.

Option 4 is not the lowest cost alternative to construct; however, Option 4 would provide the most cost-effective solution, as additional inspection and maintenance would be negligible once constructed. Option 4 also would not impact other environmental resources in the project area (factor vi). Option 4 would require mitigation for impacts to the two Section 4(f) properties. Mitigation measures are described in Section 7.0 below.

Pursuant to 36 CFR 800.5(d), implementing regulations of Section 106 of the National Historic Preservation Act (NHPA), FHWA has presented the Preferred Alternative (Option 4) and the effect determination (Adverse Effect) to SHPO and Beaverhead-Deerlodge National Forest. Both agencies have concurred that the Preferred Alternative would adversely affect both the Harding Way Retaining Wall and the Milwaukee Road Pipestone Pass Tunnel Number 11. Concurrence under Section 106 is found in Appendix B.

7.0 ALL POSSIBLE PLANNING

Per 23 CFR 774.3, Section 4(f) requires all possible planning to minimize harm and requires documentation of measures taken to minimize harm and the concurrence of OWJs over the Section 4(f) property(s) regarding these measures. The measures taken to minimize harm and mitigate impacts include:

- Development of a Memorandum of Agreement (MOA) in consultation with the OWJs over the Section 4(f) property(s) (MT SHPO and Beaverhead-Deerlodge National Forest) and FHWA and MDT (invited signatory) to identify appropriate measures and responsible parties to mitigate the adverse effects. The executed MOA is found in Appendix C (FHWA, 2025). The executed MOA has been signed by all signatories, and includes the following mitigation measures:
 - MDT will develop a written interpretive marker that details the history and significance of Harding Way with a side bar about the Milwaukee Road Pipestone Pass Tunnel Number 11 (24SB1162). The marker will be installed at the pull-out on Pipestone Pass. A draft text of the marker will be provided for review and comment to the SHPO and Beaverhead-Deerlodge National Forest. Comments, if any, will be incorporated into the marker to the extent possible. The interpretive marker will be installed at the pull-out by June 30, 2027.
 - MDT completed Level II Historic American Engineering Record (HAER) documentation of Milwaukee Road Pipestone Pass Tunnel Number 11 (24SB1162) for the National Park Service (NPS). The documentation has been completed and was accepted by the NPS on July 16, 2025. SHPO was provided a copy of the final HAER document on August 1, 2025.
 - MDT digitally documented the Harding Way Retaining Wall (24B11163) utilizing both standard and drone photography. The retaining wall will be documented prior to its removal. The photographs and a report were submitted to SHPO on August 18, 2025.
 - MDT will inform SHPO in writing of the completion of all stipulations of the MOA.

8.0 CONCLUSION AND FINDINGS

FHWA and MDT have considered all feasible and prudent avoidance alternatives and all non-avoidance (least overall harm) alternatives for the project.

Section 4(f) states that the Secretary may approve a transportation program or project requiring the use of publicly owned land of a park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance or land of a historic site of national, state, or local significance as determined by the OWJ over those resources only if:

1. There is no prudent and feasible alternative that would avoid using those resources; and
2. The program or project includes all possible planning to minimize harm resulting from the use.

FHWA and MDT have determined that:

- There are no feasible or prudent alternatives that avoid using or adversely affecting the Section 4(f) property(s), as the avoidance alternatives do not meet the project's purpose and need, and/or they result in exorbitant construction costs, have social impacts, or unknown environmental impacts.
- With the exception of the Preferred Alternative, all non-avoidance alternatives failed to meet the purpose and need of the project, did not meet the Beaverhead-Deerlodge National Forest's desire to close the Milwaukee Road Tunnel due to significant safety

concerns, and would be cost prohibitive either at construction or through future inspection and maintenance needs.

- The Preferred Alternative for the Pipestone Pass Erosion Repair Project has included all possible planning to minimize harm resulting from the physical use and adverse effects to the Section 4(f) properties. The project includes an executed MOA between FHWA, SHPO, and Beaverhead-Deerlodge National Forest to resolve the adverse effects to the Milwaukee Road Pipestone Pass Tunnel Number 11 (24SB1162) and the Harding Way Retaining Wall (24SB1163) through implementation of several mitigation and minimization measures.

9.0 RECORD OF COORDINATION

Table 3 lists efforts conducted in support of this Section 4(f) Evaluation. Appendix B contains copies of the coordination. Appendix C includes the Executed MOA.

Table 3: Record of Coordination Relative to the Section 4(f) Property

Date	Activity	Description	Correspondence in Appendix B?
09/30/2024	Meeting between MDT and Beaverhead-Deerlodge National Forest	The meeting was held to discuss the project and potential impacts to the Beaverhead-Deerlodge National Forest, including the potential fill of the Milwaukee Road Pipestone Tunnel Number 11.	No. Meeting minutes were not available.
10/22/2024	Coordination between MDT and Beaverhead-Deerlodge National Forest	Coordination on impacts to the Milwaukee Road Pipestone Tunnel Number 11 and Beaverhead-Deerlodge National Forest approval to fill the tunnel as part of the project.	Yes
10/30/2024	MDT Section 106 Consultation with SHPO	MDT letter to SHPO providing project information and determination of effects	Yes
12/09/2024	SHPO Concurrence	SHPO Concurrence Letter on determination of effects	Yes
01/13/2025	Tribal Consultation Initiated	MDT initiated consultation with seven federally recognized tribes within the project vicinity and the Little Shell Office. Tribes were given 30 days to respond. No responses were received.	No

Date	Activity	Description	Correspondence in Appendix B?
02/14/2025	Section 106 Documentation submitted to Advisory Council on Historic Preservation (ACHP)	FHWA submitted draft Section 106 documentation to the ACHP with an invitation to participate in the Section 106 and Section 4(f) processes.	No
03/05/2025	ACHP Coordination with FHWA	ACHP declined to participate in the development of the MOA for the project.	Yes
03/21/2025	Executed MOA	MOA to document mitigation efforts as a result of the project's adverse effect to Milwaukee Road Pipestone Tunnel Number 11 (24SB1162) and the Harding Way Retaining Wall (24SB1163), in accordance with Section 106 of the National Historic Preservation Act.	Yes. The executed MOA is included in Appendix C.

10.0 REFERENCES

- Ahlich, S. (2025, October 15). Pipestone Alternative Email. MDT.
- FHWA. (2025). *Memorandum of Agreement Between FHWA, Beaverhead-Deerlodge National Forest, and Montana SHPO Regarding Pipestone Pass Erosion Repair*.
- GCM Services, Inc. (2022). *A Class III Cultural Resource Inventory Along MT Highway 2: "Pipestone Pass Erosion Repair"*. Butte, Montana.
- MDT. (2022a). *Montana Historical Society Form 24SB1162*.
- MDT. (2022b). *Montana Historical Society Form 24SB1163*. Helena: MDT.
- MDT. (2024). *Preliminary Field Review Report*. Helena, MT.
- MDT. (2025a). *Preliminary Geotechnical Evaluation - 460 Report*.
- MDT. (2025b). *Geotechnical Engineering Alignment (Activity 464) Report*. Butte District.
- MDT. (2025c). *Corridor Earthwork Report - Pipestone Pass*.
- MDT. (2025d). *AASHTOWare Project Estimation - Pipestone Pass Erosion Repair [Option 4]*.

APPENDIX A: PHOTO LOG

PHOTO LOG – PIPESTONE PASS EROSION REPAIR

STPP 29-3(13)75

UPN 10092000

GENERAL PHOTOS



PHOTO 1: MT-2 (Harding Way/Pipestone Pass), facing southeast



PHOTO 2: Harding Way Retaining Wall (24SB1163), facing southeast

PHOTO LOG – PIPESTONE PASS EROSION REPAIR

STPP 29-3(13)75

UPN 10092000

GENERAL PHOTOS



PHOTO 3: Harding Way Retaining Wall (24SB1163), facing north



PHOTO 4: Harding Way Retaining Wall (24SB1163), facing north

PHOTO LOG – PIPESTONE PASS EROSION REPAIR

STPP 29-3(13)75

UPN 10092000

GENERAL PHOTOS



PHOTO 5: Harding Way Retaining Wall (24SB1163), close up of foundation of retaining wall



PHOTO 6: MT-2 (Harding Way/Pipestone Pass), facing northwest underneath roadway

PHOTO LOG – PIPESTONE PASS EROSION REPAIR

STPP 29-3(13)75

UPN 10092000

GENERAL PHOTOS



PHOTO 7: Southern Slope of MT-2 and Milwaukee Railroad Tunnel Number 11 (SB241162), facing southwest



PHOTO 8: Eastern end of Milwaukee Railroad Tunnel Number 11 (SB241162), facing northwest

PHOTO LOG – PIPESTONE PASS EROSION REPAIR

STPP 29-3(13)75
UPN 10092000
GENERAL PHOTOS



PHOTO 9: East interior of Milwaukee Railroad Tunnel Number 11 (SB241162), facing northwest



PHOTO 10: West end of Milwaukee Railroad Tunnel Number 11 (SB241162), facing southeast

PHOTO LOG – PIPESTONE PASS EROSION REPAIR

STPP 29-3(13)75
UPN 10092000
GENERAL PHOTOS



PHOTO 11: West interior of Milwaukee Railroad Tunnel Number 11 (SB241162), facing southeast

APPENDIX B: RECORD OF COORDINATION

Ahlich, Sam

From: Boese, Chauncey
Sent: Monday, April 28, 2025 10:12 AM
To: Ahlich, Sam
Subject: FW: Erosion Repair Hwy 2 Pipestone Pass -- meeting Monday SEPTEMBER 30

Follow Up Flag: Follow up
Flag Status: Flagged

FYI for the 4F process.

Chauncey Boese, P.E.

District Projects Engineer | Butte District
406-494-9636

From: Lahey, Timothy - FS, MT <timothy.lahey@usda.gov>
Sent: Tuesday, October 22, 2024 10:35 AM
To: Boese, Chauncey <cboese@mt.gov>; Walund, Sandra - FS, MT <sandra.m.walund@usda.gov>
Cc: Jones, Brandon <brjones@mt.gov>; Cross, Patrick <pacross@mt.gov>
Subject: [EXTERNAL] RE: Erosion Repair Hwy 2 Pipestone Pass -- meeting Monday SEPTEMBER 30

Yes, you can design for the tunnel to be filled as part of the repair. It would cost way too much for us to make that tunnel usable for the public.



Tim Lahey
District Ranger
Forest Service
Butte Ranger District
Beaverhead-Deerlodge National Forest

p: 406-494-0250
c: 406-533-8408
timothy.lahey@usda.gov

1820 Meadowlark Lane
Butte, MT 59701

www.fs.fed.us [fs.fed.us]

[usda.gov] [twitter.com] [facebook.com]

Caring for the land and serving people

From: Boese, Chauncey <cboese@mt.gov>
Sent: Tuesday, October 22, 2024 8:19 AM
To: Lahey, Timothy - FS, MT <timothy.lahey@usda.gov>; Walund, Sandra - FS, MT <sandra.m.walund@usda.gov>
Cc: Jones, Brandon <brjones@mt.gov>; Cross, Patrick <pacross@mt.gov>
Subject: RE: Erosion Repair Hwy 2 Pipestone Pass -- meeting Monday SEPTEMBER 30

Hello,

Just following up on this erosion repair on Pipestone Pass. Have you gotten any feedback in regards to the railroad tunnel possibly being partially filled over as part of the repair? I think following the meeting we had on 9/30 I think that was the only issue you wanted to follow up on before we proceed with our design.

Let us know if you need any more information.

Thanks,

Chauncey Boese, P.E.

District Projects Engineer | Butte District
406-565-7520

From: Boese, Chauncey

Sent: Monday, September 30, 2024 1:34 PM

To: Lahey, Timothy - FS, MT <timothy.lahey@usda.gov>; Walund, Sandra - FS, MT <sandra.m.walund@usda.gov>

Subject: RE: Erosion Repair Hwy 2 Pipestone Pass -- meeting Monday SEPTEMBER 30

This address should get to me:

Chauncey Boese, P.E.

District Projects Engineer | Butte District
Montana Department of Transportation
3751 Wynne Avenue
Butte, MT 59701
O: 406-494-9636 | C: 406-565-7520 | cboese@mt.gov

-----Original Appointment-----

From: Cross, Patrick <pacross@mt.gov>

Sent: Tuesday, September 24, 2024 9:18 AM

To: Cross, Patrick; Cross, Patrick; Lahey, Timothy - FS, MT

Cc: Walund, Sandra - FS, MT; McCann, Patrick; Boese, Chauncey; Jones, Brandon; Mueller, Kevin; Brazill, Jason

Subject: Erosion Repair Hwy 2 Pipestone Pass -- meeting Monday SEPTEMBER 30

When: Monday, September 30, 2024 1:00 PM-2:00 PM (UTC-07:00) Mountain Time (US & Canada).

Where: Microsoft Teams Meeting

Meeting to update USFS on an upcoming MDT project that is in early design phase.

Microsoft Teams [Need help? \[aka.ms\]](#)

[Join the meeting now](#) [teams.microsoft.com]

Meeting ID: 295 298 286 478

Passcode: je7nwX

Dial in by phone

+1 406-318-5487,,523243536# United States, Billings

[Find a local number \[dialin.teams.microsoft.com\]](https://dialin.teams.microsoft.com)

Phone conference ID: 523 243 536#

Join on a video conferencing device

Tenant key: [291818717@t.plcm.vc](https://t.plcm.vc)

Video ID: 114 834 555 0

[More info \[dialin.plcm.vc\]](https://dialin.plcm.vc)

For organizers: [Meeting options \[teams.microsoft.com\]](https://teams.microsoft.com) | [Reset dial-in PIN \[dialin.teams.microsoft.com\]](https://dialin.teams.microsoft.com)

From: Lahey, Timothy - FS, MT <timothy.lahey@usda.gov>

Sent: Tuesday, September 24, 2024 9:01 AM

To: Cross, Patrick <pacross@mt.gov>

Cc: Walund, Sandra - FS, MT <sandra.m.walund@usda.gov>; McCann, Patrick <pmccann@mt.gov>; Boese, Chauncey <cboese@mt.gov>; Jones, Brandon <brjones@mt.gov>

Subject: [EXTERNAL] RE: Erosion Repair Hwy 2 Pipestone Pass -- meeting Monday Oct 30?

Hi Patrick,

Next Monday at 1:00 works for Sandra and I. We are just waiting on one person to take a look at the area, which is happening this week. After that we can get you the authorization to conduct the work.



Tim Lahey
District Ranger

Forest Service
Butte Ranger District
Beaverhead-Deerlodge National Forest

p: 406-494-0250

c: 406-533-8408

timothy.lahey@usda.gov

1820 Meadowlark Lane
Butte, MT 59701

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Caring for the land and serving people

From: Cross, Patrick <pacross@mt.gov>

Sent: Monday, September 23, 2024 2:40 PM

To: Lahey, Timothy - FS, MT <timothy.lahey@usda.gov>

Cc: Walund, Sandra - FS, MT <sandra.m.walund@usda.gov>; McCann, Patrick <pmccann@mt.gov>; Boese, Chauncey <cboese@mt.gov>; Jones, Brandon <brjones@mt.gov>
Subject: Erosion Repair Hwy 2 Pipestone Pass -- meeting Monday Oct 30?

Hi Tim and Sandra,

We are hoping to meet with you sometime soon so that the engineers can describe how this project is coming along better than I can. Are you available for an hour (likely less) next Monday, Oct 30 at either 12 or 1? Please let me know if there would be a better time on Monday or if that day won't work.

Thanks,

Patrick



Patrick Cross

Butte District Biologist
Environmental Services | Rail, Transit and Planning
Montana Department of Transportation
2701 Prospect Ave
PO Box 2001001
Helena, MT 59620
406-444-9205 | pacross@mt.gov

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[How are we doing? \[arcg.is\]](https://arcg.is)

From: Lahey, Timothy - FS, MT <timothy.lahey@usda.gov>
Sent: Thursday, August 15, 2024 3:38 PM
To: Cross, Patrick <pacross@mt.gov>
Cc: Walund, Sandra - FS, MT <sandra.m.walund@usda.gov>
Subject: [EXTERNAL] RE: Erosion Repair Hwy2 Pipestone Pass

Ok, thanks for that clarification. We will take a look at it and get back to you. I will be your point of contact for this project.



Tim Lahey
District Ranger
Forest Service
Butte Ranger District
Beaverhead-Deerlodge National Forest

p: 406-494-0250
c: 406-533-8408
timothy.lahey@usda.gov

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Butte, MT 59701
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Caring for the land and serving people

From: Cross, Patrick <pacross@mt.gov>
Sent: Thursday, August 15, 2024 2:03 PM
To: Lahey, Timothy - FS, MT <timothy.lahey@usda.gov>
Cc: Fleming, Gina - FS, MT <gina.fleming@usda.gov>; Ball, Anna - FS, MT <anna.ball@usda.gov>; Walund, Sandra - FS, MT <sandra.m.walund@usda.gov>
Subject: RE: Erosion Repair Hwy2 Pipestone Pass

Hi Tim,

This is the same project – thanks for providing MDT the letter on 6/28.

Since then, the geotech engineers recommended the fill slope go all the way down the hill and across the old railroad grade to tie into the opposite slope, which is more than was anticipated during our 6/20 preliminary field review. Most of the impacted area had been expected to be on the highly eroded slopes immediately below the retaining wall, whereas now it will include a larger area with more trees: I very roughly estimate 3,500 square feet of forested terrain as measured on Google Maps. It would be designed to avoid impacting the railroad tunnel, but just barely. This may be more impact than expected when the 6/28 letter was issued.

So we wanted to update the Forest on the current design alternative and give you an opportunity to review your previous decision with this new information, and particularly to identify permitting for the anticipated tree removal, requirements or recommendations for a revegetation plan, and any other input from the Forest. I'd be happy to schedule a meeting with the MDT design team to provide more information if that would be helpful, otherwise please let me know if you have any questions or if there is any other information I can provide.

Thanks,

Patrick



Patrick Cross

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[How are we doing? \[arcg.is\]](http://arcg.is)

From: Lahey, Timothy - FS, MT <timothy.lahey@usda.gov>
Sent: Thursday, August 15, 2024 10:02 AM
To: Cross, Patrick <pacross@mt.gov>
Cc: Fleming, Gina - FS, MT <gina.fleming@usda.gov>; Ball, Anna - FS, MT <anna.ball@usda.gov>; Walund, Sandra - FS, MT <sandra.m.walund@usda.gov>
Subject: [EXTERNAL] FW: Erosion Repair Hwy2 Pipestone Pass

Hi Patrick,

I issued a letter on 6/28 to MDOT approving this activity. The description of the project in your 8/7 email sounds similar to the one already approved. Is it the same project or have aspects of the project changed?



Tim Lahey
District Ranger
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Butte Ranger District
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c: 406-533-8408
timothy.lahey@usda.gov

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From: Walund, Sandra - FS, MT <sandra.m.walund@usda.gov>
Sent: Friday, June 28, 2024 10:55 AM
To: tiwaniak@mt.gov; cuptmor@mt.gov
Cc: Lahey, Timothy - FS, MT <timothy.lahey@usda.gov>; Fleming, Gina - FS, MT <gina.fleming@usda.gov>
Subject: Erosion Repair Hwy2 Pipestone Pass

Therese,

Good morning! Thank you for your proposal to conduct an erosion repair project located near Pipestone Pass on Highway 2 of the Deerlodge National Forest Service lands. I have attached a letter stating that no special use permit is required from us. I suggest that you carry a copy of this letter with you while in the field. If you have any questions, please feel free to contact me with the information provided below.

Thank You,

Sandra

Sandra Walund
Realty Specialist
Forest Service
Beaverhead Deerlodge National Forest North Zone

p: 406-859-8211
f: 406-859-3689
sandra.m.walund@usda.gov

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October 30, 2024

Samantha McGowen, Compliance Officer
Montana State Historic Preservation Office
225 North Roberts Street
PO Box 201201
Helena, MT 59620-1201

Subject: STPP 29-3(13)75
Pipestone Pass Erosion Repair
UPN 10092000

Dear Sam:

The MDT has programmed a roadway and roadside safety improvement on Montana Highway 2 on the east side of Pipestone Pass south of Butte. The project begins at Reference Post (RP) 75.1 and extends 0.4 miles to RP 75.5. An old retaining wall and the road is being eroded away because of runoff from the hill to the north. The proposed work would be to fill in the area downhill to the south side of the existing highway at a 3:1 slope. This fill area will allow the road alignment to be shifted south approximately 4 to 5 feet which would allow for a better drainage ditch on the north side of the road. The work would channel water coming off the hillside down the ditch and stop future erosion on the southside of the south of the road. The fill area would cover an abandoned Milwaukee Road Railroad tunnel headwall below the roadway and fill in the cut area that was dug for the railroad grade entry to the tunnel to the east of the headwall. The project would also result in the removal of badly deteriorated retaining wall. The project is in the NE¼ of Section 11, T1N, R7E in Silver Bow County.

The project area is entirely owned by the Beaverhead-Deerlodge National Forest and through consultation with their representatives, they support the tunnel headwall being covered. The tunnel's structural integrity is not structurally sound and the Forest has barricaded the tunnel to keep people from entering it.

A cultural resource survey for this project has been conducted and the report submitted to your office on December 6, 2022. SHPO concurred with MDT's determination that the Milwaukee Road Railroad Tunnel #11 (24SB1162) and the Harding Way Historic District (24SB1100) within the APE are eligible for the National Register of Historic Places. Since then, the Harding Way Historic District was listed in the National Register on April 8, 2024 (NR# SG100010219). There are two National Register-eligible rock billboards (24SB1120) near the APE. The retaining wall mentioned above is a contributing component of the historic district. The rock billboards are located north of the existing roadway and outside the APE for this project. MDT will map them on the plans (should they include the rocks outside the construction zone) and label them "Do Not Disturb." The APE is not within the Thompson Park Historic District (24SB0592).

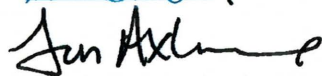
The proposed project would have an **Adverse Effect** to the Milwaukee Road Railroad Tunnel #11 (24SB1162). The tunnel has been abandoned and unmaintained since the line was abandoned in 1980. It is currently in poor condition and is showing signs that the interior concrete walls are

buckling. The Beaverhead-Deer Lodge National Forest has closed the northwest end of the tunnel to prevent public access to the deteriorating structure. The MDT project would place fill over the tunnel entrance and cover the tunnel headwall, thus sealing it from the public and ending a safety hazard. The Beaverhead-Deerlodge National Forest supports the MDT closing off the southeast end of the tunnel. The railroad grade, except in proximity to the tunnel would be perpetuated unchanged outside the project limits.

The stone retaining wall is in poor condition and is falling apart because of the drainage issue at that location. The proposed project would remove the retaining wall and replace it with fill to end the erosion problem. The Harding Way Retaining Wall (24SB1163) is not visible from the road and is poorly seen from the abandoned railroad grade below it. The retaining wall is a contributing component of the Harding Way Historic District (24SB1100). The removal of the wall would cause an **Adverse Effect** to the retaining wall (24SB1163) because of its removal. Erosion has already destroyed the lower part of the wall. The loss of the wall, however, would constitute a **No Adverse Effect** to the historic district. Approximately 0.4 of a mile of Harding Way would be shifted 4 to 5 feet to the northeast to allow improvements to the existing roadside ditch. There would be no significant change to the alignment of Harding Way/MT-2 and the existing width of the roadway would be unchanged – even in the section that would be reconstructed. None of the other features associated with the historic district are within the APE for the project. There would be no change in the forested setting of the district. The MDT, however, would install an interpretive marker at the existing turnout on Pipestone Pass, adjacent to the northwest of the retaining wall, that describes the history and significance of Harding Way. MDT would also be responsible for photo-documenting the retaining wall which is not visible from the roadway (using a drone because the wall is not easily or safely accessible).

MDT requests your concurrence that the proposed Pipestone Pass Erosion Repair project would have an **Adverse Effect** to the Milwaukee Road Railroad Tunnel #11 (24SB1162) and the Harding Way Retaining Wall (24SB1163) and **No Adverse Effect** to the Harding Way Historic District (24SB1100). The rock billboards (24SB1120) are outside the APE of this project. MDT will take measures to ensure they are not disturbed by construction activities. MDT will develop an MOA describing possible mitigation measures to SHPO upon your concurrence.

If you have any questions, please don't hesitate to contact me at 444-6258 or email at jaxline@mt.gov.



Jon Axline, Historian
Environmental Services

Copies: Geno Liva, P.E., Butte District Administrator
 Damian Krings, P.E., Highways Engineer
 Bill Semmens, Resources Section Supervisor
 Tim Lahey, District Ranger, Beaverhead-Deerlodge National Forest
 Sandra Walund, Realty Specialist, Beaverhead Deerlodge National Forest
 Ayme Swartz, Zone Archaeologist, Beaverhead-Deerlodge National Forest



Montana State Historic Preservation Office
225 N. Roberts St.
P.O. Box 201201
Helena, MT 59620-1201

December 9, 2024

Jon Axline, Historian
Montana Department of Transportation
2701 Prospect Ave.
P.O. Box 201001
Helena, MT 59620-1001

Re: STPP 29-3(13)75 / Pipestone Pass Erosion Repair / UPN 10092000

Dear Jon,

Thank you for your letter and associated materials (received October 30, 2024) and additional information (received November 26 and December 5, 2024) regarding the proposed Pipestone Pass Erosion Repair Project in Silver Bow County. We concur with your determination of Adverse Effects to Historic Properties, specifically 24SB1162 and 24SB1163. We agree that site 24SB1100 will not be adversely affected.

Please note that our concurrence does not substitute for a good faith effort to consult with interested parties, local government authorities, and American Indian tribes. If you receive a comment that substantially relates to a historic property located within or adjacent to the Area of Potential Effect, please submit it to our office for review. Include documentation of how the comment was addressed. If you have any questions or concerns, do not hesitate to contact me at (406) 444-6485 or Samantha.McGowen@MT.gov. Thank you for consulting with us.

Sincerely,

Samantha (Gilk) McGowen, M.S.
Compliance Officer
Montana State Historic Preservation Office



March 5, 2025

Joseph Weigand
Environmental Protection Specialist
Montana Division
Federal Highway Administration
585 Shephard Way, Suite 2
Helena, MT 59601

Ref: *Pipestone Pass (Highway 2) Erosion Repair*
Silver Bow, Montana
ACHP Project Number: 021919

Dear Mr. Weigand:

On February 24, 2025, the Advisory Council on Historic Preservation (ACHP) received your notification and supporting documentation regarding the potential adverse effects of the referenced undertaking on a property or properties listed or eligible for listing in the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act, does not apply to this undertaking. Accordingly, we do not believe our participation in the consultation to resolve adverse effects is needed.

However, if we receive a request for participation from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer, affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Should the undertaking's circumstances change, consulting parties cannot come to consensus, or you need further advisory assistance to conclude the consultation process, please contact us.

Pursuant to Section 800.6(b)(1)(iv), you will need to file the final Section 106 agreement document (Agreement), developed in consultation with the Montana SHPO and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the Agreement and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with your notification of adverse effect. If you have any questions or require our further assistance, please contact Kasey Miller at (202) 517-6389 or by e-mail at kmiller@achp.gov

and reference the ACHP Project Number above.

Sincerely,

A handwritten signature in black ink that reads "Dana Daniels". The signature is written in a cursive style with a large, prominent initial "D".

Dana Daniels
Historic Preservation Technician
Office of Federal Agency Programs

Ahlich, Sam

From: Ahlich, Sam
Sent: Wednesday, July 16, 2025 3:05 PM
To: Emily Peterson
Cc: Hope Weaver
Subject: 10092000-Pipestone Pass Erosion Repair - 4(f) Additional Info
Attachments: 10092000_CORR_CUT_071625.pdf; 10092000gtgdm464.pdf

Good afternoon,

Please see the attached earthwork report for the alternative that would move the road to the north, with the total quantity of cut shown in the email below. I have also attached the Geotech report which analyzes each alternative.

Please let me know if you have any questions or there is any other information that you may require.

Thanks,
Sam

From: Uptmor, Carl <cuptmor@mt.gov>
Sent: Wednesday, July 16, 2025 8:14 AM
To: Ahlich, Sam <sahlrich@mt.gov>
Cc: Mueller, Kevin <kmueller@mt.gov>; Jones, Brandon <brjones@mt.gov>; Casey, Dennis <decasey@mt.gov>
Subject: 10092000 4F Pipestone Cut

When doing a rough estimate for a cut by moving the road 10 feet into the rock wall with 12' lanes, 20.4' subgrade shoulder, 3' ditch, and a 1.5:1 cut all to the finish grade surface. We got 30,357 yd³ but we will need to times it by 15% because of the point cloud accuracy= 34,911 yd³ of cut.



Carl Uptmor
Road Designer | Butte District
Montana Department of Transportation
3751 Wynne Ave
Butte, MT 59701
406-494-9657 | cuptmor@mt.gov
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Ahlich, Sam

From: Ahlich, Sam
Sent: Wednesday, October 15, 2025 3:38 PM
To: Emily Peterson
Cc: Hope Weaver
Subject: FW: [EXT] FW: Pipestone Alternative
Attachments: Corridor Earthwork Report.pdf

Hi Emily,

Please see the attached cut quantities for the new road alignment alternative. Please let me know if you need anything else to wrap up the report.

Thanks,
Sam

From: Jones, Brandon <brjones@mt.gov>
Sent: Wednesday, October 15, 2025 2:15 PM
To: Ahlich, Sam <sahlich@mt.gov>
Cc: Mathews, Anita <amathews@mt.gov>; Uptmor, Carl <cuptmor@mt.gov>; Mueller, Kevin <kmueller@mt.gov>
Subject: RE: [EXT] FW: Pipestone Alternative



Brandon Jones P.E.
Butte District Preconstruction Engineer
Butte District Preconstruction Bureau
3751 Wynne Avenue
Butte, MT 59701
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406-498-6852
| mdt.mt.gov

Butte District



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From: Ahlich, Sam <sahlich@mt.gov>
Sent: Tuesday, October 14, 2025 3:31 PM
To: Jones, Brandon <brjones@mt.gov>
Cc: Mathews, Anita <amathews@mt.gov>; Uptmor, Carl <cuptmor@mt.gov>; Mueller, Kevin <kmueller@mt.gov>
Subject: RE: [EXT] FW: Pipestone Alternative

Good afternoon,

Ahlich, Sam

From: Ahlich, Sam
Sent: Thursday, October 16, 2025 1:37 PM
To: Hope Weaver; Emily Peterson
Subject: FW: [EXT] FW: Pipestone Alternative

Good afternoon,

Here's the cost breakdown. Let me know if that works for you!

Sam

From: Uptmor, Carl <cuptmor@mt.gov>
Sent: Thursday, October 16, 2025 7:06 AM
To: Ahlich, Sam <sahlrich@mt.gov>; Jones, Brandon <brjones@mt.gov>
Cc: Mathews, Anita <amathews@mt.gov>; Mueller, Kevin <kmueller@mt.gov>
Subject: RE: [EXT] FW: Pipestone Alternative

estimate	1295406
blasting consultant	20000
drilling holes	14700
obliterate roadway	14556
excavation Unclassified	12569160
Rough Total	\$13,913,822.00

From: Ahlich, Sam <sahlrich@mt.gov>
Sent: Tuesday, October 14, 2025 3:31 PM
To: Jones, Brandon <brjones@mt.gov>
Cc: Mathews, Anita <amathews@mt.gov>; Uptmor, Carl <cuptmor@mt.gov>; Mueller, Kevin <kmueller@mt.gov>
Subject: RE: [EXT] FW: Pipestone Alternative

Good afternoon,

Just providing an update. Sounds like DOWL has the 4(f) eval wrapped up, so as soon they can incorporate the cost estimate for the new alignment alternative we can get it submitted to FHWA.

Thanks,
Sam

From: Jones, Brandon <brjones@mt.gov>
Sent: Tuesday, October 7, 2025 3:12 PM
To: Ahlich, Sam <sahlrich@mt.gov>
Cc: Mathews, Anita <amathews@mt.gov>; Uptmor, Carl <cuptmor@mt.gov>; Mueller, Kevin <kmueller@mt.gov>
Subject: RE: [EXT] FW: Pipestone Alternative

Hi Sam,
We'll have Carl start working on that.

Thanks.



Brandon Jones P.E.
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From: Ahlrich, Sam <sahlrich@mt.gov>
Sent: Friday, October 3, 2025 10:36 AM
To: Jones, Brandon <brjones@mt.gov>
Subject: FW: [EXT] FW: Pipestone Alternative

Hi Brandon,

Can you provide a super rough cost estimate for this alternative, per Emily's email below?

Thanks,
Sam

From: Emily Peterson <epeterson@dowl.com>
Sent: Friday, October 3, 2025 10:33 AM
To: Ahlrich, Sam <sahlrich@mt.gov>
Cc: Hope Weaver <hweaver@dowl.com>
Subject: [EXTERNAL] RE: [EXT] FW: Pipestone Alternative

Sam,

One last question. Did Brandon and his team develop a cost estimate for this alternative? We have cost estimates for all of the other alternatives. Without him going into too much effort, do you think he could spitball a general estimate?

Emily Peterson
Environmental Manager

DOWL

(503) 620-6103 | office
(406) 324-7419 | direct

dowl.com [dowl.com]

From: Emily Peterson <epeterson@dowl.com>
Sent: Thursday, October 2, 2025 8:18 AM
To: Ahlrich, Sam <sahlrich@mt.gov>
Subject: RE: [EXT] FW: Pipestone Alternative

That sounds great. We will focus on getting the report wrapped up this week. Hope and I talked through how to move things around to address Rebecca's comments. We are good shape.

This exhibit from Brandon will work great. Just a question on the line work. I see the new roadway alignment and then the perpendicular lines from the old alignment to the new alignment. Is that implying that they would plan to blast out that whole hillslope?

Emily Peterson
Environmental Manager

DOWL

(503) 620-6103 | office
(406) 324-7419 | direct
dowl.com [dowl.com]

From: Ahlrich, Sam <sahlrich@mt.gov>
Sent: Thursday, October 2, 2025 8:00 AM
To: Emily Peterson <epeterson@dowl.com>
Subject: [EXT] FW: Pipestone Alternative

WARNING: External Sender - use caution when clicking links and opening attachments.

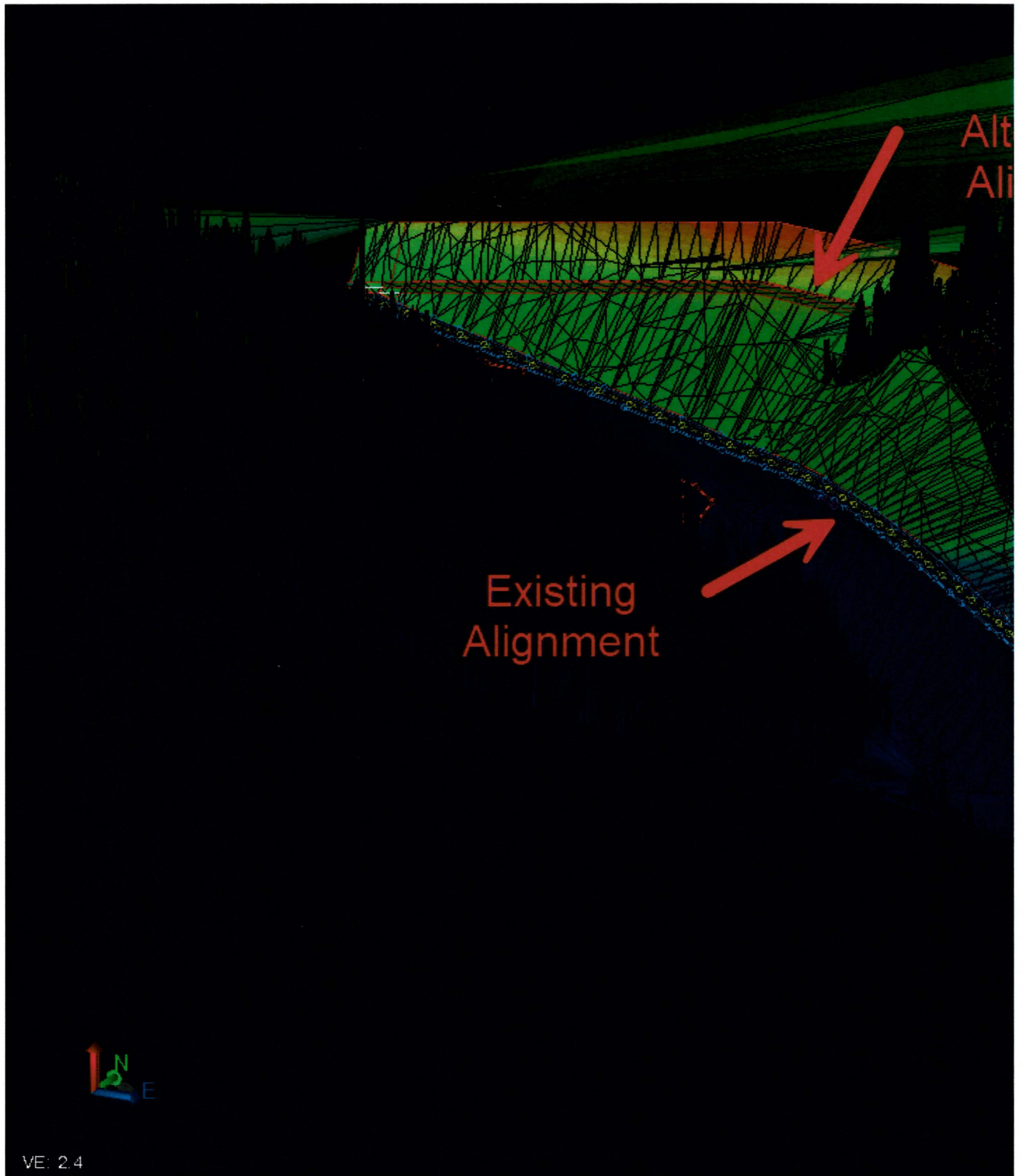
Hi Emily,

Please see Brandon's exhibits below regarding the realignment. Do you think this is enough for you to add it to the report, or do you need a written narrative?

Thanks,
Sam

From: Jones, Brandon <brjones@mt.gov>
Sent: Wednesday, October 1, 2025 4:42 PM
To: Ahlrich, Sam <sahlrich@mt.gov>
Cc: Mathews, Anita <amathews@mt.gov>; Mueller, Kevin <[kmueler@mt.gov](mailto:kmueller@mt.gov)>; Uptmor, Carl <cuptmor@mt.gov>
Subject: Pipestone Alternative





Alt
Ali

Existing
Alignment



VE: 2.4



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Butte District Preconstruction Engineer
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APPENDIX C: EXECUTED MEMORANDUM OF AGREEMENT

**MEMORANDUM OF AGREEMENT
BETWEEN FEDERAL HIGHWAY ADMINISTRATION,
BEAVERHEAD-DEERLODGE NATIONAL FOREST,
AND THE
MONTANA STATE HISTORIC PRESERVATION OFFICE
REGARDING
PIPESTONE PASS EROSION REPAIR
STPP 29-3(13)75
UPN 10092000
SILVER BOW COUNTY, MONTANA**

WHEREAS, the Federal Highway Administration (FHWA) plans to partially fund the erosion repair project, STPP 29-3(13)75, Pipestone Pass Erosion Repair Project (Project), administered by the Montana Department of Transportation (MDT); and

WHEREAS, the MDT has an easement across the Beaverhead-Deerlodge National Forest within the project area; and

WHEREAS, the Project includes the filling in of the east portal of the Pipestone Pass Railroad Tunnel No. 11 (24SB1162), an historic property eligible for the National Register of Historic Places (NRHP) under Criteria A and C; and

WHEREAS, the FHWA has defined the Project's area of potential effects (APE) as the abandoned railroad tunnel; and

WHEREAS, FHWA has determined that the Project would have an adverse effect to the Pipestone Pass Railroad Tunnel No. 11 (24SB1162) and the Harding Way Retaining Wall (24SB1163), and has consulted with the Beaverhead-Deerlodge National Forest and the Montana State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f); and

WHEREAS, the affected properties are the Pipestone Pass Railroad Tunnel No. 11 (24SB1162) and the Harding Way Retaining Wall (24SB1163) in Silver Bow County, Montana; and

WHEREAS, FHWA has consulted with MDT regarding the effects of the Project on historic properties and has invited MDT to sign this MOA as an invited signatory; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), FHWA notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination with specific documentation pursuant to 36 CFR 800.6(a)(1)(iii) on December 10, 2024; and

WHEREAS, the ACHP responded to FHWA's notification on March 5, 2025 that the ACHP participation in the consultation to resolve adverse effects for this Project was not needed; and

NOW, THEREFORE, FHWA and SHPO agree that the Project shall be implemented in accordance with the following stipulations to take into account the effect of the Project on historic properties.

I. STIPULATIONS

FHWA shall ensure the following measures are carried out:

- A. MDT will develop a written interpretive marker that details the history of and significance of Harding Way with a sidebar about the Pipestone Pass Railroad Tunnel No. 11 (24SB1162). The marker will be installed at the pull-out on Pipestone Pass. A draft text of the marker will be provided for review and comment to the SHPO. Its comments, if any, will be incorporated into the marker to the extent possible. The interpretive marker will be installed at a place in the vicinity of the bridge by June 30, 2027.**
- B. MDT will complete Level 2 Historic American Engineering Record (HAER) documentation of the Pipestone Pass Railroad Tunnel No. 11 (24SB1162) for the National Park Service. The documentation will be completed and accepted by the National Park Service by December 30, 2025. SHPO will be provided a copy of the final HAER document by January 1, 2026.**
- C. MDT will digitally document the Harding Way (24SB1163) utilizing both standard and drone photography. The retaining wall will be documented prior to its removal. The photographs and a report will be submitted to SHPO by December 31, 2025.**
- D. MDT will inform SHPO in writing of the completion of all stipulations of this MOA.**

II. DURATION

This MOA will expire within the sooner of either ten (10) years from the date of its execution or following the completion of all stipulations. Prior to such time, FHWA may consult with the other signatories to reconsider the terms of this MOA and amend it in accordance with Stipulation V below.

III. MONITORING AND REPORTING

Until termination or expiration of this MOA, FHWA shall provide the parties to this MOA a summary report detailing work undertaken pursuant to its terms. The report shall include any scheduling changes proposed, problems encountered, and any disputes and objections received in FHWA's efforts to carry out the terms of this MOA. The report will be provided to SHPO by December 31 of each year until the termination of this MOA.

IV. DISPUTE RESOLUTION

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA were implemented, FHWA shall consult with such party to resolve the objection. If FHWA determines that such objection cannot be resolved, FHWA will:

- A. Forward all documentation relevant to the dispute, including the FHWA's proposed resolution, to the ACHP. The ACHP shall provide the FHWA with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, FHWA shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. FHWA will then proceed according to the final decision.
- B. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, FHWA may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, FHWA shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.
- C. FHWA's responsibility to implement the terms of this MOA not subject to the dispute shall remain unchanged.

V. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all the signatories is filed with the ACHP.

VI. TERMINATION

This MOA will terminate upon completion of its terms. If, prior to its completion, any signatory to this MOA determines that its terms cannot be carried out, that party shall immediately consult with the other signatories to develop an amendment per Stipulation V, above. If within thirty (30) days (or another time period agreed to by all the signatories) an amendment cannot be reached, any signatory may terminate this MOA upon written notification to the other signatories.

If this MOA is terminated prior to its completion, FHWA must either (a) execute a new MOA pursuant to 36 CFR § 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7, prior to work continuing on the Project. FHWA shall notify the signatories which course of action it will pursue.

Execution of this MOA by the FHWA and SHPO and implementation of its terms supports FHWA's efforts to account for the effects of this Project on historic properties and afford the ACHP an opportunity to comment.

SIGNATORIES:

LUCIA HAYDEE
OLIVERA

Digitally signed by LUCIA
HAYDEE OLIVERA
Date: 2025.03.21 11:02:15 -06'00'

Lucia Olivera, Montana Division Administrator
Federal Highway Administration

Date



Peter Brown, SHPO
Montana State Historic Preservation Office

3/12/25
Date

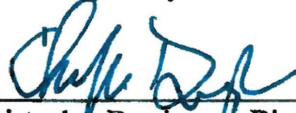
TIMOTHY LAHEY

Digitally signed by TIMOTHY
LAHEY
Date: 2025.03.21 10:36:32 -04'00'

Tim Lahey, District Ranger
Beaverhead-Deerlodge National Forest

Date

Invited Signatory:



Christopher Dorrington, Director
Montana Department of Transportation

3/7/2025
Date

APPENDIX D: Geotechnical Engineering Report



Memorandum

To: Brandon Jones, P.E.
District Preconstruction Engineer, Butte District

From: Bret Boundy, PG
Geotechnical Hazards and Assets Manager
Patrick S. McCann, P.E.
Geotechnical Manager – Butte District

Date: July 8, 2025

Subject: STPP 29-3(13)75
Pipestone Pass Erosion Repair Option Analysis
UPN: 10092000
Geotechnical Engineering – Alignment (Activity 464) Report

This memo is the Geotechnical Engineering – Alignment (Activity 464) Report for the subject project. The purpose of this memo is to present an analysis of several options for addressing erosion and ongoing failure at a stone wall supporting the present traveled way (PTW) of MT 2 near RP 75.2. This study of alternatives compares costs, levels of effort, and the pros and cons of each of the potential configurations and provides recommendations. A table of assumptions, estimations and calculations is included at the end of this report.

Because of the substantial exposure of the geological conditions at this site, a drilling investigation (Activity 462) was not required or performed for the proposed project.

Project Location and Limits, (See Figure 1):

- County: Silver Bow
- Route: MT-2/P-29
- RP: 75.2±
- PLSS Information: T01N, R07W, Section 11

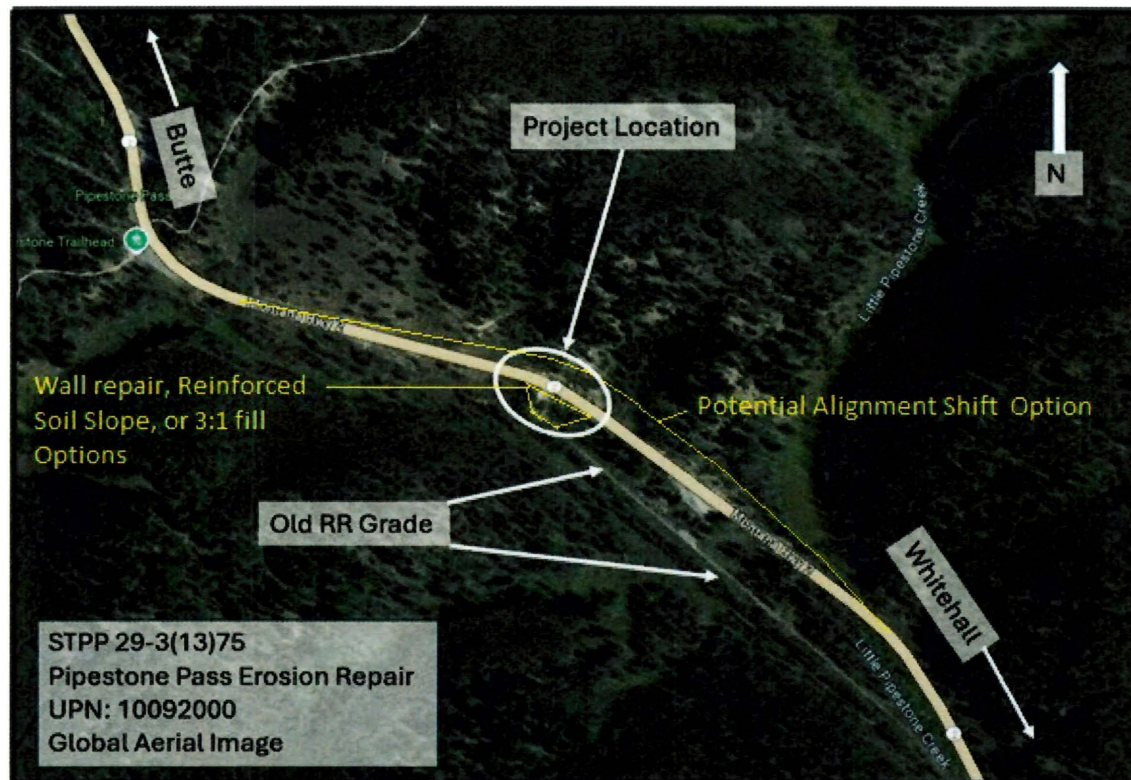


Figure 1

Problem Description and Background

For a more detailed description of the geologic setting, soil types and project background, see the Preliminary Geotechnical Evaluation(460 report), dated 02/09/2025 by Patrick McCann, provided at this link: [10092000 460 Report](#)

A failing stone masonry retaining wall and the adjacent roadway embankment are being eroded and undercut by runoff within the limits of a proposed roadside safety improvement project. **(See Figure 2)** This wall supports the roadway, and its inevitable decay will result in failure encroaching into the pavement and eventual loss of the highway. The four options that were considered to mitigate this problem are: 1: Shifting the alignment to the north, away from the wall, 2: Repair and extension of the existing wall, 3: Creating a steep 1.5:1 to 1:1 (H:V) reinforced soil slope (RSS) or, 4: constructing a conventional 3:1 embankment. **(see figures 1, 3 and 4)**

Option 4, a conventional 3:1 embankment, is preferred for geotechnical, construction efficiency, final product reliability, and economic reasons.

The costs associated with the discussions below, which are in 2025 dollars, only include primary construction items. **Traffic control, mobilization, IDC, PE, CE, contingency, inflation, and other significant items are not included.** The values below are only intended to provide a scale and a comparison of the costs of each option.



Figure 2

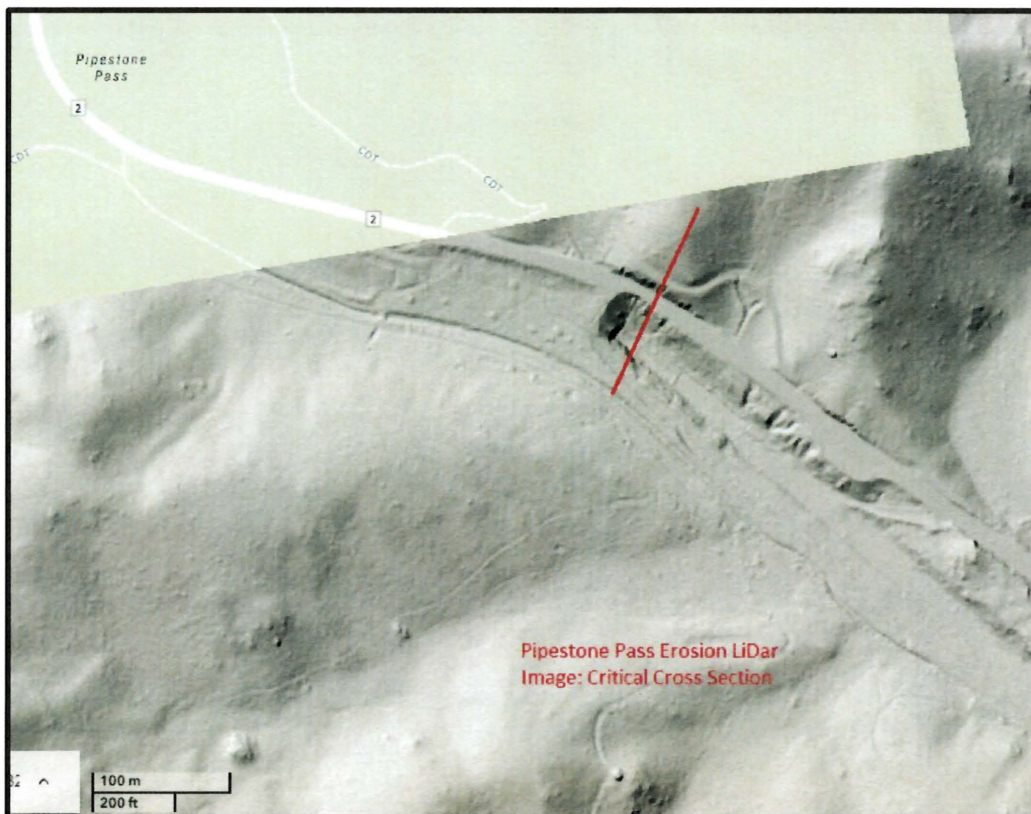


Figure 3

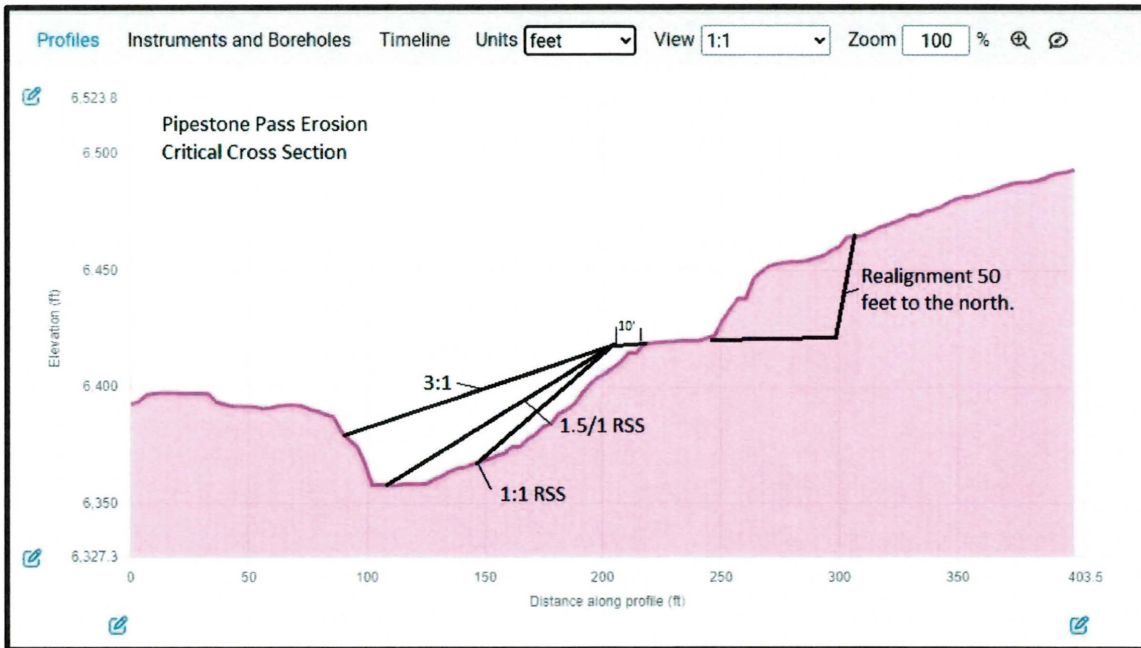


Figure 4

Detailed Discussion of Options:

Option 1- Shift Alignment North: If the wall is allowed to fail and headward erosion of the surrounding slope continues until global slope stability (natural angle of repose) is reached, the new crest of the slope will migrate 20 to 40 feet to the north over the years. To avoid future impacts of this eroding slope, the roadway alignment should be shifted a minimum of 45 feet to the north. The adjacent rock cut should be moved no less than 50 feet to the north to maintain a minimum ditch to catch rockfall from the new, taller cut, and to provide drainage.

Because of the existing curves, it is estimated that approximately 2,200 feet of roadway would need to be reconstructed to achieve this shift and maintain an acceptable geometry. Such a reconstruction would require roughly 41,000 yd³ of excavation, the majority being rock excavation. At an average cost of \$33/yd³, the excavation cost would be approximately \$1,353,000. Drilling presplitting holes to construct the final rock cut will be an additional \$315,000 and the cost to reconstruct the roadway without considering such items as culverts, topsoil, etc., would be another \$630,000, bringing the total of major construction costs to a total of approximately **\$2.3 million.**

Advantages:

- Partial preservation of the historic wall and tunnel below. (“partial” because the existing historic wall will continue to collapse and eroding slope material will be deposited at the base of the slope, burying some portion of the tunnel entrance.)
- Potential to gain additional width for widening in the future with an increased shift.

Disadvantages:

- Highest cost
- Extensive blasting
- Extensive traffic control, compounded by blasting
- Potential impacts to wetlands, which only exist north of the existing roadway on the eastern end of the new alignment.

Option 2- Repair and Extension of the Existing Wall: The only potentially viable wall repair and extension method at this site would be a built-out soil nail wall (SNW). The impracticality and/or very high cost of other wall types can be discussed further if requested. A rough construction cost estimate in 2022 was approximately \$400,000 to construct such a wall. With inflation, it is estimated that a SNW repair would cost a minimum of **\$440,000**. This option will result in a structure that will need to be inspected and maintained as an asset. Construction of a soil nail wall “repair” will destroy and/or encapsulate the historic wall.

Advantages:

- Least invasive solution
- Lowest cost
- Potentially the quickest solution

Disadvantages:

- Limited improvement in width (typical build-out limit of SNW is about 3 to 4 feet)
- Asset limitations and requirements including:
 - Design life restrictions
 - Inspection requirements
 - Increased consequences of failure

Option 3- Construction of a Reinforced Soil Slope (RSS): A new RSS could be used to gain width to the south of the existing highway. By using a reinforced design, a steep, yet globally stable slope could be constructed, limiting the footprint and volume of the embankment. Although a 1:1 slope could technically be built, a 1.5:1 would be preferred as construction would be simpler, and the slope surface would be less complex to stabilize. A 1.5:1 slope with an upper break ten feet outside of the existing guardrail would require a newly constructed embankment with 20 to 30 layers of reinforcement. Taking construction requirements into account, it is estimated that an area (measured perpendicular to the slope) of a 1.5:1 slope would be 1,500 yd². At a cost of \$466/yd² for an RSS in 2025 dollars, the construction cost would be approximately **\$700,000**. A 1:1 RSS would have less face area in theory, however greater restrictions on fill material and a welded wire face or other complex facing requirements would be required, resulting in greater design and construction complexity and higher unit costs (\$500+/yd²), yielding a similar cost to the 1.5:1 slope. This option will also result in a structure that will need to be inspected and maintained as an asset.

Advantages:

- Moderate to low cost
- Smaller footprint preserves tunnel portal
- Limited traffic control

Disadvantages:

- Specified, high quality granular fill material will be required
- Difficult to prevent erosion or establish vegetation on a steep south-facing slope
- Labor intensive
- The same asset limitations and requirements would apply for this option, similar to the Repair and Extension option

Option 4- Construction of a conventional fill with a 3:1 slope: A conventional embankment with a 3:1 slope would be stable and easily vegetated using unclassified fill. Approximately 36,000 yd³ of material would be required. At a cost of \$17.50/yd³ for unclassified fill, the total cost would be about **\$630,000**.

Advantages:

- Low cost

- Common construction techniques
- Very stable and well vegetated final product
- Could increase additional width south of the roadway with minimal extra effort
- Greatest design life
- Does not result in an “asset” that needs to be maintained and inspected in perpetuity as this type of construction is common practice in the building of highways.

Disadvantages:

- Greatest impact to tunnel portal (complete burial)



Figure 5: Approximate Limits of Proposed 3:1 Fill Area

Assumptions and Estimates:

See also the table of bid item costs from similar projects following the discussions below:

Alignment Shift to the North: This option will require 2,200 feet of realignment; the majority being rock excavation. This rough estimate was derived from on-site observation and study of LiDAR mapping. The cut in the “critical cross section” (Figure 4) is 50-feet wide and 45’ high. The cut volume was estimated from cross sections created every 200’ using 2020 and 2022 LiDAR data. The cost per cubic yard was estimated from other projects with a significant proportion of rock excavation. The presplit value was based on an average hole depth of 15’ and a hole spacing of 2 feet over a distance of 2000 feet.

July 8, 2025

Soil Nail Wall Repair: This estimate is based entirely on an inflation-adjusted price quote provided by GSI (GeoStabilization International) in 2022. This quote assumed support by Maintenance Forces during construction, did not include guardrail replacement and like all of these options, did not include traffic control. GSI has undergone a large reorganization since providing the price quote and Soil Nail Wall Construction costs vary wildly, making estimates difficult. The \$440,000 estimate given above could be significantly low.

Reinforced Soil Slopes: A 1.5:1 RSS could use an erosion-protected soil face; however this steep slope would require a significant effort to vegetate and protect from erosion. Still, this would be less expensive than a wire face that would be required for a 1:1 slope. The 10-foot-wide shoulder addition is likely a minimum value for RSS design and construction requirements. A wider top width may be required, increasing the footprint, possibly the slope area, and potentially affecting the tunnel entrance.

Conventional 3:1 Embankment Fill: As the materials and construction methods for this method are familiar and common, there are fewer unknowns related to this option. Topsoil and seeding would be necessary as would a drainage system for the buried railroad tunnel entrance. None of these items are included.

Questions regarding this project may be directed to Pat McCann, MDT Geotechnical Section, at 444-6277 or via email at pmccann@mt.gov. Alternatively, contact Bret Boundy, MDT Geotechnical Section at 444-6278 or via email at bboundy@mt.gov.

Attachment: Table of bid item costs used for similar projects and estimated costs for this project

E-Copies:

- Dave Cunningham, P.E. – District Construction Engineer
- Jeff Harrison – District Construction Operations Engineer
- Mike Drew – District Utility Agent
- Cameron Kloberdanz, P.E. – Geotechnical and Pavement Bureau
- Jennifer Johnson, P.E. – Hydraulics
- Trevor Little, P.E. – Hydraulics
- Miles Yerger, P.E. – Surfacing Design
- Greg Zeihen, P.E. – Surfacing Design
- Patrick Cross - Environmental Services
- Sam Ahlrich P.E. - Projects Development Engineer – Environmental Services
- Jon Axline – Environmental Services
- Joe Radonich – Environmental Services

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Project / Year	Item	quantity	units	adjusted 2025 price	2025 Total Cost
N. of Rocker Intg N / 2023	drill presplit holes	7,708.00	LF	\$20.36	\$156,934.88
Pipestone	drill presplit holes	15,000.00	LF	\$21.00	\$315,000.00
Bozeman Hill-East / 2025	Uncl Ex (high % rock ex)	43,201.00	CY	\$52.50	\$2,268,052.50
Flathead R- 3M NW Bigfork / 2025	Uncl Ex (high % rock ex)	54,230.00	CY	\$30.63	\$1,661,064.90
Mountainside to MP 133 /2025	Uncl Ex (high % rock ex)	172,909.00	CY	\$26.44	\$4,571,713.96
N. of Rocker Intg N / 2023	Uncl Ex (high % rock ex)	49,460.00	CY	\$22.30	\$1,102,958.00
Pipestone	Uncl Ex (high % rock ex)	41,000.00	CY	\$33.00	\$1,353,000.00
Pipestone	Construct 2200' roadway	0.42	MI	\$1,513,000.00	\$630,416.67
Pipestone-- total for realignment					\$2,298,416.67
Pipestone- Total for Soil Nail Wall	SNL	1.00	LS	\$432,410.00	\$432,410.00
Beartooth Highway / 2017	Reinforced Soil Slope	135.00	SY	\$656.00	\$88,560.00
S-228-S of Highwood/MT 11-1 / 2012	Reinforced Soil Slope	125.00	SY	\$285.00	\$35,625.00
Structures SE of Manhattan / 2009	Reinforced Soil Slope	346.00	SY	\$457.00	\$158,122.00
Pipestone-- total for RSS	Reinforced Soil Slope	1,500.00	SY	\$466.00	\$699,000.00
SF 159 SE Columbus Shld Wd / 2025	Embankment in Place	20,783.00	CY	\$15.99	\$332,320.17
SF 189 S of Miles City Shld Wd / 2025	Embankment in Place	74,875.00		\$13.96	\$1,045,255.00
Mobridge Slide Repairs / 2024	Embankment in Place	170,520.00		\$22.50	\$3,836,700.00
Pipestone- total for 3:1 fill	Embankment in Place	36,000.00	CY	\$17.50	\$630,000.00

Black Text = prices associated with similar projects in 2025 dollars

Red Text = estimated costs derived from above similar projects.